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CANADIAN PUBLIC HEALTH JOURNAL

VOL. XX June, 1929 No. 6

The Food and Drugs Act Administration*

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THE general welfare of any state being, as it is, directly dependent on the nutrition of its people, the food supply influencing physical development and general activities, it is of prime importance that food merchandise should be of good quality and marketed without adulteration or deception. Closely related to the food problem is that of drugs. In times of illness it is important that remedies of dependable quality should be procurable, and that medicinal preparations intended for the treatment of disease should be sold without misrepresentation. It was for these reasons that the Parliament of Canada enacted legislation designed to prevent the adulteration and misbranding of food and drugs, thus providing a measure of protection to the purchasing consumer.

Canadian legislation on the subject of food was initiated in 1875 and developed by the passing of the Adulteration Act, with various amendments. These served the very useful purpose of preventing our food supply from being grossly adulterated or misbranded, but in the year 1920 it was deemed advisable to make the legislation more complete. The sections of the Adulteration Act dealing with food and drugs were repealed and the Food and Drugs Act was passed, the administration of it being entrusted to the Department of Health, as one of its many functions in the public service. After six years' experience with the Act it was found advisable to close certain loop-holes which had appeared and to widen its scope so that proper control of all foods and drugs should be included.

THE TEXT OF THE FOOD AND DRUGS ACT

The complete text of the Food and Drugs Act, now known as

**Presented, with the permission of the Deputy Minister of Pensions and National Health, at the Annual Meeting, Canadian Public Health Association, Winnipeg, October, 1928.*

Chapter 76, Revised Statutes of Canada, 1927, a pamphlet containing the regulations made thereunder by Order in Council, 1928, and a brief summary of the activities of the Food and Drugs Division, appearing in the annual report of the Department of Health, can all be obtained upon application to the Department at Ottawa.

In the text of the Act "food" includes every article used for food or drink by man and every ingredient intended for mixing with the food or drink of man, for any purpose whatever. "Drug" includes all medicines for internal or external use for man or other animal and any substance or mixture of substances intended to be used for the treatment, mitigation or prevention of disease in man or animal.

The Intent of the Act.

The original intent of the Act was to provide protection for the purchasing consumer, both from the standpoint of deception or fraud and from injury to health. With the amendment of 1927, The Proprietary or Patent Medicine Act and the Opium and Narcotic Drug Act, the entire field is covered.

In so far as the Food and Drugs Act is concerned, the vital problem is the prevention of the importation and sale of misbranded or adulterated food and drugs. Through clauses for misbranding, which is dealt with in section 7, it is demanded that the purchaser shall not be misled as to the quality or quantity of the article purchased. Imitations and substitutes are not prohibited but they should be sold for what they really are. Place or country of origin should be accurately declared. Damage should not be concealed by colouring, coating or powdering. False or exaggerated claims must not be made upon the label or otherwise, the words "or otherwise" including collateral advertising. With the exception of certain containers which are standardized, the contents of each package weighing two ounces or more, gross, must be conspicuously and correctly stated in terms of weight, measure or number. Labels must not bear any designs, devices or statements of a false or misleading nature, and the packages themselves must not be deceptive with respect to design, construction or fill. It should be noted particularly that these requirements apply both to food and to drugs.

By penalizing the adulteration of food, dealt with in Section 4 of the Act, the intention was to prevent the incorporation of cheaper, defective or dangerous ingredients, and to prohibit the abstraction or removal of valuable constituents. Diseased, putrid or rotten animal or vegetable material must not be used in food, and there is also a prohibition of any poisonous ingredients which may render it injurious to the health of the consumer, whether added with intent or otherwise. A double penalty is provided if the adulteration is injurious to health.

The adulteration of drugs is covered by Section 6 of the Act. In marketing pharmacopoeial preparations, the British Pharmacopoeia is the standard unless the pharmacopoeia of some other country is speci-

fied on the label. Medicinal preparations, not pharmacopoeial, the names of which are to be found in a generally recognized standard work on materia medica or drugs, may also be sold if the standard strength, quality and purity is observed. Special provision has been made for dealing with biological products, including vaccines, sera, animal tissue preparations such as pituitary extract and thyroid. There are also regulations dealing with preparations of certain vegetable drugs, for which biological tests are deemed necessary, (strophanthus, digitalis, ergot) and with organic compounds of arsenic or related products, intended to be administered by injection.

Preparations sold under distinctive names, not to be found in any pharmacopoeia or generally recognized standard work on materia medica or drugs, must either be registered under the Proprietary or Patent Medicine Act or labelled to show a complete list of medicinal ingredients contained therein.

By agreement with the provinces in 1922, provincial authorities assumed responsibility for the control of the quality of fresh milk and cream as sold, it being understood that the legislation enacted would not contravene any requirements of the Food and Drugs Act. For these articles of food, as well as for water supplies, localized control of details is necessarily a municipal responsibility.

THE ADMINISTRATION OF THE ACT

Personnel and Offices

For the administration of the Food and Drugs Act, the necessary executive offices are maintained in Ottawa, and in addition the organization includes both field inspection and laboratory services. There are now 27 inspectors of food and drugs located in the larger centres in Canada. Their many duties include investigating complaints, collecting samples for examination, inspecting import shipments at ports of entry and attending to any prosecutions which may arise.

In addition to the central laboratories in Ottawa, branch laboratories are maintained at Halifax, Montreal, Toronto, Winnipeg and Vancouver. Ten chemists are employed in the Ottawa laboratory and at each branch a chemist and an assistant chemist carry on the work for the district. The greater part of the laboratory work is devoted to routine analyses of a most varied character, in addition to such work of investigation as may be necessary to develop satisfactory methods of analysis.

One Year's Analyses

In the fiscal year ended March 31st, 1928, the samples analysed in the laboratories totalled over 10,000. Some of the more important items with the number of samples examined in each instance, are as follows:— meat and meat products (sausage, hamburg steak, etc.) 600, nuts 485, maple products 668, coffee 33, flavouring extracts 85,

fish 46, food colours 192, baking powder 28, soft drinks 414, dried and evaporated fruits 1478, cheese 41, spices 911, ice cream 198, spaghetti 94 and drugs of all kinds 983. During the year prosecutions numbered 150 and cash penalties totalled $11,000, in addition to some heavy confiscations. Confiscated goods are disposed of by destruction if worthless or hopelessly adulterated, or by donation to charitable institutions if only misbranded and still of value for use as food or drug.

THE BASIS OF CORRECTION

Without in any way prejudicing the intended protection of the purchasing consumer all possible effort is made to secure correction of adulteration or misbranding at its source. Where there is wilful intent to adulterate or deceive or where the adulteration or misbranding is a menace to health it is necessary to take drastic action with seizures and confiscations.

Without discussing these points further in detail, an attempt will be made to outline the experience encountered in the enforcement of one small subsection which is of special interest. By referring to the text of the legislation, it is noted that "Food or drug shall be deemed to be misbranded within the meaning of this Act if false or exaggerated claims are made for it upon the label or otherwise".

The case to be cited is a drug case, arising from the sale of a goitre remedy marketed under a distinctive name, not to be found in any pharmacopoeia or text book on materia medica or drugs.

In dealing with pharmaceutical preparations, we may, for convenience, divide them into four groups. First, we have those described in the British Pharmacopoeia or the pharmacopoeia of another country. All of these may be marketed in Canada if they are of standard quality and properly labelled. Of special importance are the biological products such as serums, vaccines, and other preparations which are now subject to biological tests and to be manufactured only by licensed establishments. In the third group we may include preparations sold under names not to be found in the pharmacopoeias but in generally recognized standard works, such as Squire's Companion to the British Pharmacopoeia, the British Pharmaceutical Codex and the Dispensatories. In addition to all these, there is another class of drug preparations sold under distinctive names not to be found in any pharmacopoeia or recognized standard work. Certain of these are registered under the Proprietary or Patent Medicine Act, but there are many not subject to this Act by reason of the fact that a list of the medicinal ingredients appears upon the label. They are in no sense secret remedies. The manufacturers of them have abandoned the old policy of extreme secrecy in protecting an imaginary discovery. In marketing such preparations they are sometimes carried away by their commercial enthusiasm and are prone to make false or exaggerated claims which have the effect

of misleading the purchaser. Others again are out and out swindlers who realize perfectly well that they are victimizing the public. As it was clearly the intention of the Act that in matters of such vital importance as food and drugs, false or exaggerated claims were not to be made, these practices are illegal, whether done through ignorance or with intent to defraud.

There are certain diseases which are particularly well suited to the purposes of those who would exploit remedies of little or no value, at prices which make the enterprise specially attractive from the standpoint of financial gain. Sufferers from tuberculosis or cancer will frequently be attracted to an advertised remedy just as the drowning man grasps the floating straw. For certain diseases such as diabetes and diphtheria we have treatments which are recognized as effective if scientifically applied, so that patients suffering from these ailments should not be misled from proper treatment with insulin or antitoxin by any haphazard device. Goitre in all its various forms is a disease not to be treated by the self-administration of drugs more or less potent, as the effects of drugs such as iodine and thyroid preparations should be carefully noted by a skilled observer and each case treated individually.

DIFFICULTIES IN CORRECTION

With these principles in mind steps have been taken to deal with some of the most glaring cases of misrepresentation. While in connection with foods similar breaches of the Act are commonly adjusted without litigation, and satisfactory correction of the whole difficulty may be secured without prosecution, it has been found that as a class, firms or individuals merchandising these medicines are not amenable to argument. Such salesmen have considerable business ability, possess a ready flow of language, are fully versed in modern methods of advertising and are familiar with the many devices of salesmanship. Sometimes the business may seem small, but the defendant is usually able to secure capable and expensive counsel.

One of the first cases encountered was that of the Alice May Goitre Remedy, advertised extensively in the Western newspapers, although "Alice May" was located in Windsor. These advertisements were not, technically, offers for sale, but merely invitations to sufferers to apply for information respecting home treatment, the details of which would be supplied by a lady who herself had been cured of goitre. Anyone replying to this advertisement received a circular letter explaining that five dollars remitted would bring this marvellous treatment. There was the usual follow-up letter, used as a chaser if the first offer were not accepted. When these were taken up officially it was rather a surprise to find that "Alice May" was a man authorized to do business under that name by a declaration made before the County Clerk under the provisions of the Ontario Partnership Act. The sole owner of the business, styling himself a goitre specialist, had sailed the seven seas for many years but had no medical qualifications whatever, although his father was at one time medical adviser to a royal family in continental Europe. The remedy consisted of two things, sold in tablet form in separate boxes, the combination costing the sufferer $5.00. It was explained in a preliminary conference with the Department

that this price was only a reasonable figure because $100.00 spent in newspaper advertising brought only forty patients to "Alice". One of these boxes contained the so-called "India Tablets", consisting of wood charcoal and dry thyroid, the other, the "India Aperient", composed of phenolphthalein and Epsom salts. Although the treatment was supposed to have originated in India, according to the literature, this conception with a romantic touch was solely for purposes of spell-binding the reader. India is said to be the end of a world pilgrimage taken by Alice in her search for relief from goitre. As for the tablets themselves, the only possible connection with India was a mere shadow. Not a single ingredient used in the treatment came from India, although it is a fact that the American charcoal used was said to be a willow charcoal and the willow tree thrives in India.

It is obviously unfair to sufferers from this disease that they should be treated by this combination of drugs without any discrimination as to the type of the goitre, with no individual control of the dosage and no observation of the effect produced upon the pulse rate and general metabolism. A seizure of the existing stock was made at Windsor and for a time it seemed probable that Canadian business in this line would be discontinued. The owner of the business procured other stock, continued advertising and sales so that it was found necessary to lay information and summon the offender to trial.

In such a case the Crown must prove that an offence has been committed, and in doing so it is necessary to have expert evidence to explain to the Court the effects produced by the indiscriminate use of the remedy in question. Dr. V. E. Henderson, Professor of Pharmacology in the University of Toronto and Dr. Young of Windsor, both appeared at the trial and gave valuable and convincing evidence. The technicalities of the Act were dealt with by inspectors and analysts. A conviction was registered and the stock under seizure was confiscated and destroyed. The business changed hands immediately afterwards and the vendor is said to have withheld all information concerning this prosecution. It is thought, however, that the nail has been clinched. The Post Office Department advises that a fraud order has been issued, depriving the offender of the use of postal facilities.

The technical and legal difficulties in dealing with such a case are not few and this brief account, which may be read in one or two minutes, covers the activities of a period of three or four months with intermittent correspondence, conferences, etc., in addition to the actual trial which itself lasted about seven hours.

A cancer remedy exploited from Nova Scotia was dealt with successfully. A marvelous jar, lined with radium ore to make tap water a general restorative has been pronounced misbranded by a court held in Toronto, so their importation and sale in Canada is to cease. Several other actions are pending. It is hoped that a few of these cases will serve as precedents and warnings to other offenders.

If any members of this association are called upon to give evidence at such trials, it is hoped that they will respond to assist a worthy cause. Sympathetic co-operation in these matters will be highly appreciated.

Rural School Hygiene*

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NO single public health interest offers more difficulties, on the one hand, or more possibilities, on the other, than the establishment and maintenance of satisfactory school sanitation in rural and small urban districts.

There are some five thousand rural schools in the Province of Ontario, attended by two hundred and forty thousand children. Most of these buildings have been in constant use for from thirty to fifty years. They were erected before any serious thought was given to the question of school hygiene, and the sole idea of the builders was to construct a building with four walls and a roof, the purpose of which, presumably, was to provide a structure which could be used as a rendezvous where children might congregate daily during three seasons of the year, to be instructed in the rudiments of certain (at that time, essential) scholastic desiderata. The similarity of appearance of these buildings precludes the possibility of there being any other motive behind the builders. Two types predominate; one of clap-board construction, the other of red brick. It is presumed that the original choice of red brick was due to the preponderance of building material of this colour; its use was continued, one imagines, because we couldn't very well have a "little red school house" of yellow brick or grey stone.

No criticism could possibly be levelled at the original builders for the design of the building or its sanitary arrangements. They builded as they knew and the honesty of their construction is evidenced by the fact that the building still stands as a monument to the knowledge of that time. The constant eulogies directed at this important educational edifice, while probably well-founded academically, have unfortunately arrested its architectural or sanitary change. To deliberately do away with a building which has such a sentimental hold on those who, while the chief taxpayers of the district, have long ceased to have any other contact, direct or indirect, than the recollection of childhood joys and sorrows, could create a furore which would sweep out of office the offending school authorities. One can visualize the reaction which would be precipitated at a well-attended annual meeting in the old school house, if the Board were to follow the playing of "When We

*Presented at the Annual Meeting, Canadian Public Health Association, Winnipeg, October, 1928.

Were a Couple of Kids," by the introduction of a motion to erect a new building on the present site.

I recall visiting a school building in a small town in Eastern Ontario, the school population of which has shown a gradual but steady decrease in the last twenty years, and discussing withthe Chairman of the Board, the wisdom of removing a tree, the branches of which were so close to the school building that they did not permit of the windows being opened, and darkened the room so that, even on the brightest days, the vision of the children was being unnecessarily taxed. My suggestion provoked that astonishment and contempt that results when radical youth presumes to instruct conservative old age; the tree had been planted by some local or national celebrity, now gone to his just reward, but whose memory was still as green in the hearts of his political adherents, as the leaves of the tree were in June. Such is sentiment, a truly essential quality, but supposedly having its limitations.

Let us select at random one of the older of these five thousand buildings, and we find the grounds inadequate in size, undrained, and not level; the building is unattractive externally, with a porch in front from which a door opens into a large room with windows on three sides (the top half of which are frosted), hooks along the back wall, an iron stove in one corner, the floor as old as the building, uneven, a mass of protruding knots and splinters; blackboard space between the side windows, seats and desks often of the old double seat variety, arranged without any thought as to the size of the occupants, a bucket of water, of doubtful source, and a common drinking cup. Washing facilities are absent altogether, children are asked to spend the entire day without access to any washing arrangements but the school pump and their pocket handkerchiefs. The well top is old, and often none too safe, and the water from the hand-washing and the dirt from the shoes are carried directly into the well through the cracks in the boards. The toilets are inadequate, unclean and a breeding place for flies.

Not all of these conditions exist in all of these schools, yet the number of schools in which a definite complaint was lodged by the local medical officer of health, in his annual report, was greatly in the majority, and in most cases, the medical officers, realizing the difficulty in making the necessary changes in lighting, ventilating, placement of blackboards, etc., have been exceedingly charitable in their criticism. Forty-nine per cent of all reports emphasized the unsatisfactory condition of the toilets, condemning the type, the state of repair or the lack of cleanliness. Many of the cases noted have been reported as undesirable at the time of previous inspections.

Any attempt to analyse the reason for this continued ignoring of the recommendations of the local authorities brings one to the conclusion that there is either an unquestionable doubt in the mind of the rural school trustee as to the relationship of so-called unsatisfactory sanitary arrangements and the health of the children of school age, or he is

indifferent to the whole subject of child health. Three factors influence the attitude of rural school boards toward this subject:—First, frank indifference or parsimony on the part of the trustees (this type is, fortunately, in the minority). One example of this class presents itself to my mind. A rural school board in one of the best counties in Southern Ontario was approached by the local Women's Institute, urging the installation of electric light to overcome the unsatisfactory natural lighting conditions which existed. The Board refused, in no uncertain terms, and when the women's organization offered to bear the cost, the trustees still refused, advancing the argument that what was good enough for previous scholars was good enough for the present group, although every member of the board had equipped his own home with electricity. Second, the steady decline in rural school population makes no demand for increased accommodation; even in the larger urban centres old buildings are prone to be replaced only when overcrowding necessitates additional accommodation, and, with the tendency for the school population to decrease instead of increase in the older portions of the province, coinciding with which is an associated decrease in municipal income, one can readily sympathize with the point of view of the local school board in their desire to avoid unnecessary expenditure, particularly when they are not fully convinced of the necessity for such. The third, and I am inclined to consider the most important one, is this apparent lack of conviction of the importance of such provision in terms of health, comfort or improved scholastic progress.

Some measure of responsibility for this last-mentioned state of affairs probably rests at the door of the health authorities, both local and provincial. Few efforts have ever been seriously made to present to those most interested, in terms which they might be expected to appreciate, the importance of maintaining the school plant in a satisfactory sanitary state. We have unreservedly condemned the present toilet facilities, which have existed as such for probably a period of years, demanded certain radical changes which entailed the expenditure of ten per cent of the total school appropriation, have given the impression that the Board had been criminally negligent in permitting the existence of this deplorable condition for even an hour and that an outbreak of typhoid fever was imminent. The fact that these conditions have probably existed for many years, and that no typhoid epidemic or individual case of typhoid has ever resulted, is ignored by the health authorities or their representatives, and in many cases, not only are the demands made insufficiently supported, but the arguments advanced are often not in conformity with our present knowledge of epidemiology. We are all too prone to confuse in our own minds practices which are merely an offence against the aesthetics or the comfort of the individual, with those which are definitely known to be injurious to health. In view of such confusion among those who are presumed

to be leaders in health matters, error, on the part of those who are merely camp followers in the health army, is not to be wondered at. All health workers are desirous of inculcating in the children of school age an inherent regard for neatness, cleanliness, beauty and self-respect; all are seized with the importance of the relationship between reasonable comfort and improved scholarship, but what is needed is a realization of the necessity for a frank, considered presentation of well-proven facts in their proper perspective.

We mentioned previously the value of good school hygiene from the standpoint of its reaction on the future behaviour of the children; while this value exists as such, it is too intangible to be of much value in stirring up any large group of those responsible for the conduct of eduational affairs locally. The plan of attack must be more specific, each complaint must be carefully investigated, a considered opinion in terms of the relationship of the conditions found and the comfort of the teacher and children or the appearance of the building given, and a reasonable demand for improvement should be made by the agency to which the local board are prone to look for leadership in such matters. For example.—The local medical officer visits in the spring of the year the school building and premises of a certain school section; he finds that the average school attendance is fifteen children, which group is made up of eight girls and seven boys of all ages; the building is old, the school population of the district is gradually dwindling, the school grounds are about an acre in size (their suitability, however, for this purpose is open to question), washing facilities are most unsatisfactory, the blackboards are poor, the seats are ill-arranged in relationship to the size of the children, windows are on both sides of the room, the toilets are of the outdoor pit style, dirty and uncared for, and the well water shows a higher than desirable bacterial count. What is to be done? A new school building would entail a new site; the total expenditure would be about fifteen thousand dollars; with the hope that township school boards or consolidated schools or some other equally desirable solution might be advanced within a reasonable time, your health officer or school inspector questions the wisdom of a demand for a new building. It is suggested in cases of this type, and they are many, that the medical officer of health and the public school inspector, supported by a technical member of the staff of the provincial health department, carefully investigate all the points of criticism and bring before the board their final opinion.

Having in mind our suggestion that the recommendations be made in terms of improved health, comfort or appearance, let us analyse the findings of this impromptu committee of investigation. The desirability of adequate play facilities is conceded; that the board should, in view of the number of children in attendance and the wide diversity of ages, be forced to provide such, is open to question. Much can be done about washing arrangements, water is easy of access, a couple of

wash basins, paper towels and soap are easy of attainment. Poor blackboards make for defective vision, as does cross-lighting, therefore, they should be corrected; if the percentage of vision defects found on careful examination support the contention, so much the better. It has not been possible to adequately demonstrate to what extent unsatisfactory seating affects the health of the occupants of the seats, but we do know that they are uncomfortable, and that lack of comfort militates against concentration; therefore, they should be replaced. The toilets may infect the water supply, or the lack of proper screening may permit flies to breed and infest the school room; these are potential health problems, as is the high B. coli count in the well water, but have we not been often a little prone to exaggerate the likelihood of such possibilities eventuating? Or, if they do occur, what then? How many cases of water-borne disease have been directly traceable to school wells in any given community? How can we depose the common drinking cup? In fact, what is a common drinking cup? In a survey conducted some three or four years ago, on more than one reply to the questionnaire, it was stated that the school did not have a common drinking cup and elaborated by saying they had two cups. Provision has been made for small tanks with bubblers. These, however, have to be kept clean and regularly filled. Janitor service in rural schools is very indifferent and the onus for keeping these services functioning rests with the teacher, who often is, unfortunately, more seized with the necessity for academic progress than future health, and can we not condone this attitude? Is she not judged only on the scholastic success of the pupils? All these questions must be asked and answered fairly, and while the health and well-being of the school age group must be at least awarded the same measure of protection that is given to the finances of the school section, let us make our demands reasonably easy of adoption, and founded on a knowledge of scientific public health practice.

My concluding point is this, that the present arrangement of local school autonomy in every school section in the country militates very materially against any early remedy of the problems of good school hygiene, and the sooner it is supplanted by some better plan, the better.

The Effect of Various Temperatures on the Viability of Vaccine Virus*

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THE number of successful "takes" in vaccinating depends almost entirely on the potency of the vaccine virus which is used. When vaccination was performed by abrading large areas, vaccine of low potency could give results. With the use of modern technique, namely, a scratch of 1/16 inch in length or simply a puncture into the skin through a drop of vaccine, a high percentage of successful "takes" can be obtained only by the use of a fully potent virus. That much vaccine when used is not fully potent was shown in a paper published recently by Force and Eddie.[1] In their investigations these authors found that the conditions under which vaccine was stored following its distribution from the laboratory were seldom satisfactory. It is common knowledge that vaccine virus must be stored in a well-iced refrigerator in order that the activity of the virus may be maintained. A warning statement to this effect is printed on all packages of vaccine virus, together with information concerning the period of time beyond which the vaccine should not be used. Such a period of time obviously applies only when the vaccine is stored under the condition stated. But it is well known that vaccine, after it leaves the laboratory, is often not stored in an iced refrigerator. A cellar, supposedly cool, is a common place to keep it. Often a cupboard in the drug store or the physician's office, or a safe in the municipal clerk's office is a common place to find the local supply. A physician may carry a package of vaccine in his bag for some days or even in his pocket. The occasional success, following the use of vaccine improperly kept, leads the vaccinator to think that such conditions are satisfactory. The failures, which outnumber the successes, are attributed to the vaccine being of inferior quality, the necessity for protection against heat not being appreciated. Manufacturers of vaccine virus take special precautions against exposure to heat in transit by forwarding supplies in iced containers. This is practical, however, only when a considerable quantity of vaccine is shipped. The distribution of a few packages through the mail with the possible exposure to a high temperature (steam-pipes, stoves, and summer heat) during transit may at times

*Presented at the Annual Meeting, Canadian Public Health Association, Winnipeg, October, 1928.

account for the failure of vaccine virus. This mishap, however, does not occur frequently, and the failure to keep vaccine cold after its receipt is the explanation of the majority of the failures.

In order to determine the deleterious effect of such storage conditions on vaccine virus, five hundred capillary tubes of vaccine were taken from each of four different preparations. Each lot was suitably divided and stored at temperatures representative of those which obtain under the various conditions already noted. Thus, one part was stored in a refrigerator at 5°-8° C; one part in a cellar, the temperature varying from 13°C. to 19°C. during the months of March to September; one part at room temperature (about 20°C.); a number of tubes of each lot were carried in a vest pocket of one of us (about 30°C.), and a smaller number were stored in an incubator at 37°C. Determination of the potency of each vaccine was made at the beginning of the experiment and at weekly intervals, for the first three months, and at longer intervals thereafter. These tests were continued until the potency was so reduced that the vaccine would not elicit a reaction when applied to the abraded skin of a rabbit. For practical purposes this is equivalent to saying that the observations were continued until the virus was completely inert. The length of the periods of necessary observation varied according to the different conditions of storage. The longest period of observation necessary was in the case of the vaccine stored in the refrigerator; this extended over a period of eighteen months.

DETERMINATION OF POTENCY

In order to determine the potency, the vaccine, undiluted and in dilutions of 1: 10, 1: 100, 1: 250, 1: 500, was applied to the skin of rabbits. In testing the undiluted vaccine, the quantity contained in one capillary tube was used in each test. The dilutions were made from a primary dilution of 1: 10 obtained by adding the contents of four capillary tubes of approximately 0.02 cc. each to 0.72 cc. physiological saline in small test tubes. There is some variation in the quantity contained in capillary tubes but this variation was controlled by using four tubes, care being taken that tubes of an average size were selected.

Rabbits were chosen which had a smooth clean skin. The rabbits were depilated with barium sulphide paste, which, when properly applied and washed off thoroughly, leaves a clean skin without a subsequent dermatitis. Prior to vaccinating, the back of the rabbit was mapped out with an indelible pencil into areas of approximately 1½ inches square. Of each dilution 0.2 cc. approximately was drawn into a capillary tube and applied to a square on the back of the rabbit by rubbing the skin of the area fairly firmly with the end of the tube. By this procedure the tube is emptied and the skin surface is evenly abraded resulting in a moist reddened area. The readings of the tests were made when the reactions had reached full development—that is,

in the course of 4 to 5 days. A 4+ reaction was considered one in which a confluent reaction covered the whole area evenly, showing no discrete papules except at the margins of the reaction. A 3+ reaction was one showing a confluent reaction in part of the area. A 2+ reaction was one showing many papules which, however, were discrete. A reaction consisting of only a few papules was recorded as 1+. The importance of the variation in the degree of reaction elicited when the same vaccine is applied to several rabbits was recognized, and was controlled by repeating irregular results and, too, by the large number of tests through which the general trend was readily apparent.

The vaccine used in these experiments was glycerinated vaccine virus.* In its propagation, brilliant green had been sprayed on the vaccinated area of the calves and while most of this dye had been removed in the washing, prior to the collection of the vaccine, sufficient remained to give a green colour of varying degree to the finished product. Number 187 was prepared without the use of phenol and was definitely green in colour. (Judging from the colour the content of brilliant green did not exceed 1-20,000). This preparation had been stored at 0°C. for 33 weeks previous to the experiment. Number 189 was prepared without phenol; it was distinctly less green than 187; it had been stored at 0°C. for 18 weeks previous to the experiment. In the preparation of number 191, 0.5 per cent of phenol had been added. It was a deeper green than 189 but less than 187; it had been stored for only 9 weeks at 0°C. previous to the experiment. Number 192 was collected from the calf without preliminary exsanguination and the vaccine was red in colour. No phenol was added in its preparation and it had been stored for 15 weeks at 0°C. before the experiment was started.

RESULTS

Table I shows the various potencies of virus 191 after storage for three months at the temperatures noted. It can be seen that, at all temperatures studied other than that of the refrigerator, the virus in three months' time had become either completely inert or markedly reduced in potency.

TABLE I

RESULTS OF POTENCY TESTS ON VACCINE VIRUS NO. 191 AT BEGINNING OF EXPERIMENT AND AFTER STORAGE FOR THREE MONTHS UNDER VARYING CONDITIONS

Dilution	Original	Refrigerator	Cellar	Room	Vest Pocket	Incubator
Undiluted	4+	4+	4+	+	—	—
1/10	4+	4+	2+	—	—	—
1/100	4+	4+	+	—	—	—
1/250	4+	2+	—	—	—	—
1/500	4+	2+	—	—	—	—

4+ confluent; 3+semi-confluent; 2+many discrete papules; +few papules; —no reaction.

The standard emulsion of pulp in a diluent of equal parts glycerine and physiological saline, one part of pulp to four parts of diluent.

Table II shows for the same preparation further observations made until the virus at each temperature had become practically inert. It will be seen from these tables that this vaccine very quickly lost all its potency when stored at 37°C. At vest pocket temperature (about 30°C.) the vaccine was rendered completely inert within a few weeks. At room temperature (about 20°-22° C.) the loss, though less rapid than at higher temperatures, was sufficiently rapid to render this virus *completely inert* in less than two months. Even at cellar temperature, 13°C. to 19°C., the rate of deterioration was very much greater than in the refrigerator, so much so that, in even a few weeks' time, the difference was readily demonstrated. At the refrigerator temperature the deterioration was more gradual, though in three months' time it was noticeable.

TABLE II

POTENCY TESTS ON VACCINE VIRUS NO. 191 STORED AT VARIOUS TEMPERATURES

Dilution	Original	Incubator		Vest Pocket		Room		Cellar		Refrigerator		
		1 wk.	3 wks.	3 wks.	6 wks.	3 mos.	6 mos.	3 mos.	6 mos.	6 mos.	12 mos.	18 mos.
Pure	4+	4+	+	3+	?	+?	—	4+	2+	4+	4+	+
1/10	4+	3+	—	3+	—	—	—	2+	—	4+	2+	—
1/100	4+	—	—	+—	—	—	—	—	—	2+	+	—
1/250	4+	—	—	—	—	—	—	—	—	+	—	—
1/500	4+	—	—	—	—	—	—	—	—	—	—	—

4+ confluent; 3+ semi-confluent; 2+ many discrete papules; + few papules; — no reaction.

Table I and Table II are quite representative of the data collected in testing all the lots of vaccine. Each showed rapid deterioration at all the temperatures studied above that of an iced refrigerator.

In interpreting these results it must be remembered that the purpose of the testing was to demonstrate the existence and quantity of virus present. Experience has shown that only a vaccine capable of eliciting a confluent take (4+) in a dilution of at least 1:250 when tested in this manner gives successful results with modern technique in human vaccination. A vaccine of this potency gives 90 to 100 per cent success. A virus of any less potency does not give as high a percentage of successful results, and the number of failures, therefore, increases with its use. Positive reactions shown in the tables indicate merely the measure of the potency. The persistence, therefore, of some potency in the vaccine is not to be understood as indicative of ability to produce "takes" in humans. It will be readily understood, therefore, that vaccine kept at all the temperatures studied, except that of a refrigerator, so quickly lost potency that, even in a few days in some cases, it could not be expected to give "takes" in human vaccination. In fact, only in the

refrigerator was a sufficient degree of potency maintained for the period of three months. Vaccine that has not been properly kept should, therefore, not be used; if it be used, no attempt should be made to overcome the deficiency and to increase the number of "takes" by resorting to old technique—namely, larger insertions, which may give rise to secondary infections and other complications.

TABLE III

TIME REQUIRED UNDER DIFFERENT CONDITIONS FOR FOUR LOTS OF VACCINE TO LOSE ALL POTENCY

At temperature of	No. 187	No. 189	No. 191	No. 192
Incubator	2 wks.	2 wks.	3 wks.	2 wks.
Vest Pocket	5 wks.	3 wks.	5 wks.	4 wks.
Room	8 wks.	5 wks.	12 wks.	6 wks.
Cellar	13 wks.	8 wks.	40 wks.	11 wks.
Refrigerator	60 wks.	28 wks.	80 wks.	45 wks.

FIGURE I.

TIME REQUIRED UNDER DIFFERENT CONDITIONS FOR FOUR LOTS OF VACCINE TO LOSE ALL POTENCY

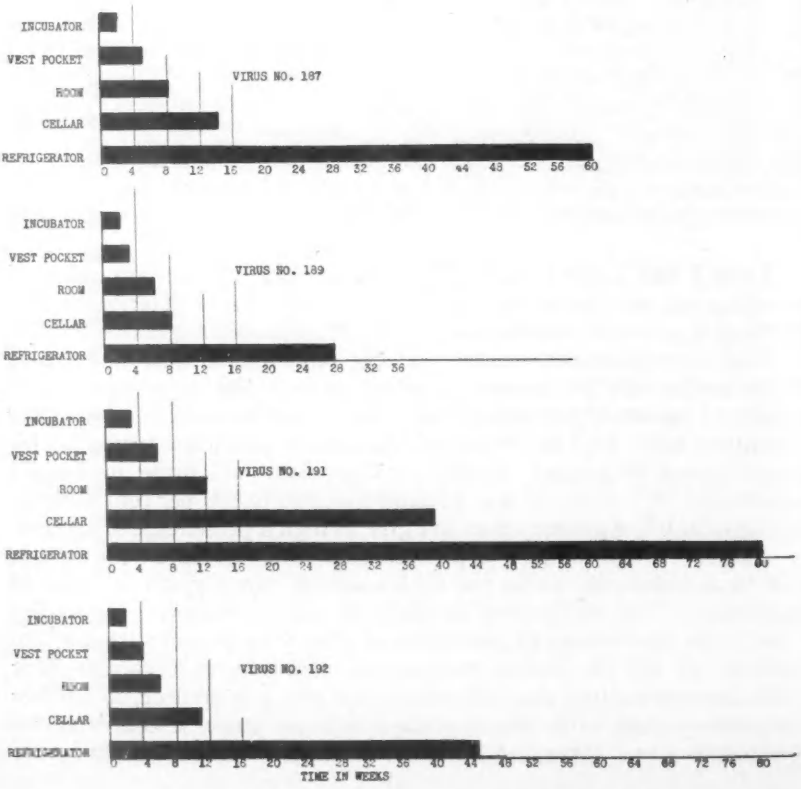

Table III is a summary of the length of time required for each lot of vaccine to become completely inert at the different temperatures. Figure I presents Table III in graphic form. These show, too, that the rate of the loss of potency was not the same in all the vaccines. While no attempt is made from this experiment to draw any conclusions as to the effect of brilliant green or phenol, there is no evidence that the virus with the larger content of brilliant green, judging from the colour, lost potency faster than the viruses with less. The content was, of course, very small in any case. The vaccine with the 0.5 per cent phenol withstood the various conditions for a longer time than vaccines without phenol. It was, however, slightly more potent at the beginning of the experiment. Vaccine number 192, a very potent vaccine originally, lost potency very quickly when exposed to temperatures higher than that of a refrigerator. At a temperature of 0°C., lower than that of the refrigerator which is usually about 5°-8°C., the vaccine has maintained its potency as well as have other viruses.

Conclusions.

1. Vaccine virus must be stored in a well-iced refrigerator in order to retain a reasonable degree of potency for three months.
2. Different lots of vaccine virus, when stored at the same temperature, show great variations in the periods during which potency is maintained.
3. At temperatures higher than that of an iced refrigerator vaccine virus quickly becomes so reduced in potency as to be valueless.

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EIGHTEENTH ANNUAL MEETING
CANADIAN PUBLIC HEALTH ASSOCIATION
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Periodic Health Examination as a Public Health Measure*

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THE biggest stumbling block in the advancement of public health to-day is that the public is slow to take advantage of the knowledge which has been gained through medical science. The time-honoured solution—education—it is true, has brought results, but they are very meagre in comparison with the efforts which have been put forth by various health agencies to acquaint the people with what actually can be done for them and their children. Campaigns against disease, if carried on vigorously and persistently, are always worth while, but even then are not generally responded to in the appreciative manner that is encouraging to health officials.

Public health really had its origin in stopping epidemics after they had started. The emphasis has shifted since to preventing epidemics before they start—a very logical procedure. The future public health in its true sense will continue in the control and eradication of the communicable diseases, but will include a much broader field, namely, the detection of disease, or of conditions which tend to disease, in the very incipient stage. The deep-rooted, late stage, so often met with at present, should be curbed before that stage is reached. How is this to be accomplished? By the general adoption of the annual periodic health examination, while apparently well. I am thoroughly convinced that the next advance, and one of the most important advances to be made in public health in our efforts towards the conservation of life, will be a national movement adopting this scheme. This is destined to be a branch of the practice of medicine just a little different from the usual, in that an apparently well person is to be examined not for any specified complaint but for the purpose of having the physician detect evidence of disease in its incipiency. One writer terms this preclinical preventive medicine. To the patient it will indicate that he is 100 per cent fit, or it will disclose unsuspected physical impairment, predisposition to disease or faulty habits of living, which must be corrected because of their influence on the general health.

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Dr. Dobell, of England, was one of the first to advocate periodic health examinations as early as 1860, some 68 years ago, and this was at a time when preventive medicine had not reached the position it now occupies, nor had many of the discoveries in the cause, treatment, and prevention of disease been made at that time. Later advocates were Dr. Bares, of France, in 1902, and Dr. George Gould, about the same time. In 1908, Dr. Burnside Foster presented before the Association of Life Insurance Presidents the possibilities of periodic examination lengthening the span of life.

THE NEED FOR REGULAR EXAMINATION

The population of Canada is about 9,507,000. It is estimated that there are two or three per cent, about 180,000 people, ill each day; 87 per cent are neither sick nor well but complain of various aches and pains, and only 10 per cent are entirely fit. It is further estimated that 50 per cent. of the present day illness is preventable. Therefore, one half of those ill, or one per cent of our population, is continuously ill unnecessarily. The yearly cost of sickness to the people of the Dominion of Canada is placed at $270,000,000, which is a heavy financial burden. Even from an economic viewpoint, if periodic examination would lessen the cost of preventable sickness it would be amply justified, apart entirely from the prosperity, contentment and enjoyment which accompanies good health.

The medical experience of the world war was a revelation of the high percentage of preventable disabling diseases and imperfections afflicting our young men and amply demonstrated the need for periodic examination. The rejection rate for military service increases with each decade, only 11 per cent being accepted in Great Britain at the age of 50, as compared with 62 per cent at the age of 18. Between the ages of 18 and 42 only 36 per cent qualified for active service.

The need for and value of periodic health examination is already recognized in preventive medicine and much more of this work is being carried on under different names than is generally realized, but there is still much untilled soil badly in need of this service. Life expectancy at birth is now about 58 years. In the last four decades modern preventive medicine has increased it by 15 years, but most of the increase is due to saving young lives. Early life is attacked mostly by acute infections over which now some control has been gained. Mortality statistics indicate that for the period after 35 and 40 years of age there has been little if any increase in life expectancy. This is the period when the so-called diseases of degeneration begin to appear. They come on stealthily and may take complete possession before their existence is known, and then their presence is announced by a general break-down. In the list of causes of death causing the greatest mortality, there is a marked change in the arrangement in the past few

years. We find that diseases causing death during the middle age period are gradually getting nearer the top of the list and replacing those causes which affect the young more especially. The reason for this is largely that more attention has been given to the regular examination of the children, to their immunization and to improved public health conditions, while people of middle age have not given and are not giving sufficient attention to their personal health when they are apparently well.

In the province of Saskatchewan heart disease now occupies first place in the list of causes of death. Last year it accounted for 9.4 per cent of the deaths in the province. In 1914, 12.1 per 100,000 died from heart disease in Saskatchewan. In 1927, 67.9 per 100,000 died from heart disease in Saskatchewan. This is an increase in mortality from this one disease of 461.1 per cent in a period of thirteen years. In other words, as a cause of death in 1914, heart disease occupied 10th place, and in 1927 it occupied first place in the list. Then in order came pneumonia second, cancer third, and tuberculosis fourth. Dr. Winslow, president of the American Public Health Association, stated in his presidential address last year that, in a period of fifty years, diseases of the heart had increased by 187 per cent and mortality from arterial diseases 650 per cent. The malignancy of cancer, if not discovered at the beginning, is now so well established that it is only necessary to further emphasize the need for early diagnosis if satisfactory results are to be expected from treatment.

As I interpret these statistics they indicate that lives are shortened and are being lost through neglecting to have a regular health check-up. Had some early malignancy, some focus of infection as diseased tonsils or abscessed teeth been located by examination of the apparently well, a contributing cause might have been removed at once. Even though slight damage has already been done, by following the doctor's advice, many years of useful life might have been added. The prevention of non-contagious chronic infections cannot well be brought under state control nor can the state dictate the conduct of the older age-group of people. Education must be relied on for the co-operation necessary.

THE PRINCIPLE ALREADY APPLIED

In Industry.

The introduction of this form of preventive medicine, apart from the insurance system, has had a more or less natural evolution. Its value in industrial organization has for some time been recognized by employers of labour mainly for two economic reasons: First, it tends to keep the employee in such physical and mental condition that he is able through this feeling of well-being to do more and to do it better, hence greater production; second, it tends to eliminate much loss of time through sickness among the employees.

In Early Life and Pregnancy.

The search for the causes of defects found among employees in industrial medicine naturally directed the attention of the physician to the fact that many of the impairments found were the direct result of some preventable condition of childhood. The health supervision of children at school revealed the fact that many of their physical handicaps, which contributed to slow progress in their studies and absence from school, could have been avoided easily had the cause been discovered in earlier childhood. As a result more attention to the infant was stressed. Study of the infant and child welfare clinics revealed the fact that many defects might have been avoided if the mother, during pregnancy, had been given more medical supervision. Further, the deaths of mothers due to causes connected with pregnancy directed attention to the need for more supervision by the physician during the pre-natal period, and as a result the practice of pre-natal care is now an established and recognized part of maternity work. All the different age periods it is seen are closely correlated and interlocked, and it may be noted that the principle of periodic medical examination has already been well launched and, under various names, is being applied—but not to certain groups who need it.

Experience of Insurance Companies

The Life Extension Institute first gave periodic examination practical application in 1914 through the co-operation of General William C. Gorgas, ex-President Taft, Dr. Eugene L. Fisk and Harold A. Ley. This institute has done much work in advancing the practice of regular examination, and through the institute 3,000,000 policy-holders in forty-five life insurance companies in the United States and Canada are able to take advantage of these examinations. There are over 8,000 general practitioners in the service of this institute. In twelve years some 400,000 persons have been examined, costing over one million dollars. The Institute finds that it more than pays to spend the money for this purpose.

The Metropolitan Life Insurance Company was among the first to take up the scheme. During 1914 and 1915, six thousand Metropolitan Life Insurance policy-holders took advantage of the free medical examination which the company offers. Those examined were given hygienic advice and those impaired were urged to consult their own physicians. Five years later it was found that only 217 persons had died among this group where 286 had been expected according to the expectation tables. This meant a saving of 69 lives among the 6,000 examined. At the end of 1924, or ten years after the first examination, 421 had died of the 6,000 originally examined when 513 had been expected. This was, therefore, a saving of 92 lives for the ten-year period. After six years' experience, Dr. Dublin, of this company, was able to demonstrate that, as a consequence of expending $60,000 on

medically examining 6,000 apparently well policy-holders, the company had gained through premiums of people whose lives were extended, $120,000. In other words the company made 100 per cent on its investment. In a nine-year period it showed an average reduction of 18 per cent in the death rate of the policyholders affected; that is, for every 100 deaths among the policyholders not regularly examined, there were only 82 deaths among those regularly examined. Among a group of impaired lives there was a reduction of 50 per cent, and this was at a time when individual hygiene was being imperfectly applied. In another instance the findings in and responses of 1,000 policyholders who had yearly examinations for successive years, were shown as follows:—1,189 impairments were found at first examination; 30 per cent corrections were shown on second examination, and increased to 50 per cent corrections as shown on third examination. The Guardian Life Insurance Company has experienced a saving of 23 per cent among those regularly examined. If results such as I have just mentioned can be secured by life insurance companies there is reason to to believe that similar results are obtainable by applying this scheme to the public at large.

THE PRINCIPLE ENDORSED BY THE PROFESSION

The principle of periodic health examinations has been endorsed by the Canadian Medical Association to such an extent that they have prepared a manual outlining how best this examination can be made by the examining physician, as, of course, the worth of the examination depends entirely on the thoroughness with which it is made. The Federal Department of Pensions and National Health further endorsed the scheme and put their stamp of approval on it by assuming the expense of printing the manual. The American Medical Association has also given its endorsation.

Our sister profession, the dentists, through the Canadian Dental Hygiene Association, has made a splendid contribution to preventive dentistry and indirectly to preventive medicine, in their campaign for better mouth hygiene. They are otaining results, too, as is evidenced by the regularity with which both adults and children visit their dentist even though they have no suspicion that their teeth require treatment. The application of the same principle exactly is necessary with respect to general health, that is, to head off disease by visiting the physician regularly.

A FUNCTION OF HOSPITALS

Every province has a large investment in hospitals especially built to care for the sick. Hospitals will always be required for this purpose, but if they were used more as health centres, where periodic health examinations were carried on for the apparently well, full advantage could be taken of the equipment such as X-ray and laboratory facilities.

This would be putting hospitals to a new use and one well justified, in that they would then occupy an important place in the field of preventive medicine, thereby constituting an additional line of defence against disease and physical failure.

AN UNIQUE EXPERIMENT IN SASKATCHEWAN

In this connection I wish to report something unique in hospital service just inaugurated in a small hospital at Milden, Saskatchewan. This hospital, which has a capacity of about eighteen beds, is conducted by the Milden Community Hospital Association. There are two physicians practising at Milden. The board of directors of the Hospital Association has announced that arrangements have been made to operate a free clinic in connection with the hospital for the residents of the district tributary to Milden, including some six rural municipalities and the villages located in these municipalities. In their announcement they state that this action on the part of the board places the equipment of an up-to-date hospital and the services of two qualified practitioners at the disposal of the public, and will no doubt be the means of suggesting treatment and giving advice in cases requiring such, proving thereby a great help in the prevention of disease and in many cases prolonging life. This action was taken primarily for the benefit and convenience of patients unable to afford treatment and regular medical examinations but the benefits are extended to everyone. The examination does not place any obligation whatever on the person having it, and he is at liberty to procure any suggested or essential treatment where he wishes. The desire of the board is to co-operate with the family physician in whatever treatment or advice is found necessary. The hospital board believes that this will stimulate that element of their people who do not take much interest in their personal welfare, and who postpone consulting their doctor until they are actually sick, when, in a great many cases the disease is too far advanced to be amenable to treatment. Saskatchewan, as you know, is the heart of many advanced co-operative movements. This new clinic is evidence of an entirely new phase of co-operation for "positive" health. It will indeed be very interesting to watch the development of this most unique plan which would appear to have originated at a most opportune time.

One writer has said that we are on the verge of another great war, this time a war against illness. At present there is a campaign of education for recruits in this war to conserve life, and everyone of us can contribute very materially towards the victory by resolving to have an annual health examination—the well-named "Birthday Examination." It really is a health barometer, indicating signs of a storm before it actually arrives and showing warning signals which should be heeded. It is one of the very first steps in gaining "positive" health, that feeling of being absolutely fit and well, thereby making it possible to actually live each day fully and abundantly.

Teaching of Health in High Schools*

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IN the elementary schools the importance of a unified health programme has long been recognized. This seems to be less true of the secondary schools. Inquires are being made, by those concerned in the education of high school students, as to the best procedure which will provide a constructive programme. We agree that health education throughout all grades can be promoted only by emphasizing all aspects of health, the physical, the mental and the moral. The ideal of health is not mere freedom from obvious physical disabilities and pathological symptoms; it is the realization of the highest physical, mental and spiritual possibilities of the individual. To arrange a health programme with this end in view, to meet the needs of the various age groups in our schools, is the problem of those who construct a curriculum.

The adolescent period is not fixed by exact age limits. It is a period of rapid growth, with great functional changes which naturally affect the mental and emotional life of the individual. It is a period of general instability, but one in which real decisions are often made. Training during this period of life should provide many and varied outlets for wholesome physical activity, and it should lay great stress on habits of decision and choice. It should direct the "gang spirit" in boys, providing and guiding social companionship rather than seeking to eliminate it. No period offers more opportunity for guidance of the individual into the best adjustments of life than does the adolescent age. Therefore a sympathetic understanding, patience, a carefully arranged hygienic programme, and a wholesome environment are of utmost importance for the boy or girl of high school age.

Such provision could be thought of under two main headings:—"Health Examination and Supervision," and "Health Education."

HEALTH SUPERVISION

Health supervision should provide for the physical examination of high school students. If an annual medical examination is indicated throughout adult life, should not some consideration be given to high school students in this regard? It is believed by many of our recog-

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nized health education authortities that it is the business of the school, as a social agency or institution, to make provision for such service. We are as yet a long way from this objective. For some time school nurses have been engaged in the health supervision of public school children. Such a service should be continued throughout the high school period. In our prairie provinces we have an efficient school nursing service for public schools, but practically no health service in the collegiate institutes.

In the newer concept, physical examination and health supervision are no longer regarded as ends in themselves but only as steps in a health programme. Specifically, health supervision aims:

1. To promote individual and group health by means of a thorough health examination of all students.
2. To secure the correction of remediable physical defects.
3. To protect students and teachers from communicable disease.
4. To note any present or past illness which may affect the student in his relationship to his work, or to his fellow students, in order that the best adjustments may be made for such student throughout his school term.

THE AIMS OF HEALTH EDUCATION

Our ideas regarding the type, of course, have changed greatly in the last few years. The curriculum now suggests a selection of activities and information in health education relating to personal and social usefulness. The demands of the new health teaching require the use of a larger body of purposeful subject matter and the elimination of all the older anatomical and physiological materials which do not apply to the problems of healthful living.

In Secondary Schools

A health education programme for secondary schools includes much more than personal hygiene. It should aim to establish ideals of health and develop a "health consciousness" which will provide the basis in later life for greater service in personal, family and community life.

Topics should be selected that represent actual health problems and subject matter should be arranged to meet the student's health need and to fit his psychological age. As in the lower grades, it must be as purposeful as is possible. In the presentation of subject matter it is most important that it be linked up with actual life situations in which its value can be understood and in which it can be applied. To illustrate: A study of the essentials of ventilation should be applied to conditions in the classroom or home. This will necessitate an investigation or survey of the ventilating system, and that pupils then be given specific responsibilities in making and maintaining the best conditions. All subject matter should be selected in answer to the

question, "Does this information or activity help to meet an individual or community health need, and does it enable the individual to make the best adjustment?"

High school students have passed fairly beyond the age of individualism into the age of socialism. It has been stated that the high school age is a period for the growth of "social consciousness." It is this fact of psychological development that should govern certain fundamentals in the construction of a high school programme. While the work during the preceding grades has been largely self-centred and individualistic, the high school period offers a proper orientation for interesting young people in the broader health problems relating to citizenship and successful community life. The earlier instruction in personal hygiene and sanitation, and in disease prevention, has resulted in certain habits being formed. Now the student should receive such instruction as will develop civic appreciation and responsibility, in order that co-operation in matters of public health may be secured. It must set up its serious objectives and select its materials and methods in the light of its aims. As in primary instruction, the teacher must keep in mind certain outcomes which can be measured in terms of a threefold objective in health teaching, namely, improved attitude, improved habits or practice, and thirdly, increased scientific knowledge.

In primary teaching, the securing of a *favourable attitude*, or perhaps more truly speaking, "creating a desire to do," is very necessary. In psychology we think of this essential in relation to the law of readiness; thus our justification in the use of particular methods that have been selected with special attention to the stage of maturity of the children concerned. Such effective methods include health stories, songs, dramatization, art correlation, etc. In advance health teaching careful motivation is again necessary. Projects and simple research are suggested. Any method that will promote an attitude toward personal and social health responsibility will be approved.

The second factor involved in health teaching is "*Improved Habits*." Good health practice is the chief objective throughout all grades and the psychology of habit formation should be specifically applied to all health instruction. Because of the advanced age of the high school student, scientific interpretation of the reason "why" is given in relation to practice. But that in itself will not insure the practice. All individuals "learn to do by doing." Health habits are established in the same way as are other habits and in relation to the same laws of learning. It is as necessary in secondary health education programmes as in primary teaching to provide opportunity for practice, and to provide for frequent repetition of the same, in order that psychological connections be strengthened.

Health knowledge is the third objective in health teaching. With young children good practice may be developed before they are able to understand much related health knowledge. Emphasis is laid upon

securing certain behaviour reactions, regardless of the "why," i.e.,—drink milk; clean your teeth; sleep ten hours. In high schools the natural science courses have as one function that of giving reasons, of explaining the "hows" and "whys" of life in such terms as to give the students a basis for a wise choice in the business of caring for themselves and others. Thus, in secondary education, scientific health knowledge is materially increased.

An illustration as to the grading of knowledge may be of value at this point. The primary pupil uses his own cup because the teacher says, "Johnnie, I would like you to bring your own cup to school; all good boys and girls use separate cups for drinking," and the child desires to do as others do. The advanced public school pupil uses his own cup because it relates to health and disease germs may be transferred by the common cup. The high school student understands the scientific aspect of the situation. He has a general knowledge of pathogenic organisms; he has a full appreciation of the danger of infected saliva, and, for the safety of himself and the safety of others, he avoids the common drinking cup.

In the study of personal hygiene it is desirable that advanced pupils should be given considerable knowledge relating to the human body in order that they may have a greater appreciation of health practice. Physiological knowledge is no longer given for its own sake but it is purposeful in as far as it is reflected in attitude and improved practice.

In presenting a lesson in personal hygiene to a senior student, the chief objective is the improvement of health practice, and attitude, through increased scientific knowledge. A specific topic might be suggested, as, "The Care of the Teeth." The approach to such a presentation is definitely physiologic. A diagram of a tooth may be developed showing structure. A complete temporary and permanent set is to be described in terms of arrangement and usefulness. This anatomical and physiological knowledge is for no other purpose than to improve the student's attitude and to give him a greater appreciation of the factors that build for good teeth, namely, nutrition, dental inspecion and cleanliness, exercise and daily care.

SUBJECT MATTER

With reference to actual subject matter suggested as suitable for a high school health programme, there is a wide variety. Subject matter as indicated in various programmes of study is somewhat tentative. It has been definitely suggested that the hygienic features of the school environment be drawn upon to provide those life situations which tend to make knowledge function. The following are suggestive:—ventilation and heating equipment; lighting; drinking and washing equipment; first aid supply; showers; playground equipment; educational use of the lunchroom.

In social science courses a study of the local community should include a survey of the community health problems. This will further civic instruction and endorse the idea of the responsibilities of a good citizen. Surveys could appropriately deal with milk supply, water supply, sewage disposal, street cleaning and garbage disposal, appreciation of the organization and function of boards of health, accident prevention, industrial hygiene, studies of health conditions of different historical periods and differences in diet and habits of living, in different countries.

The development of a purposeful physical education programme, to secure all-round physical ability, is considered of prime importance during this particular period.

Secondary schools have an opportunity, through co-ordinated efforts of certain specialized departments, to provide information as applied to health problems. Biological courses contribute to a health education programme by creating greater interest in personal and public health. They contribute to useful information relating to disease prevention, to a greater appreciation of the function and care of various systems of the human body, to a knowledge of fundamental life processes and to wholesome instruction in sex problems.

Home economics contributes much to this health programme. Each home may be thought of as a separate health unit and all that makes for successful living is reflected there. Nutrition, as one phase of this science, is fundamental to health and it is most important that knowledge of this subject be made definitely practical.

Special activities which will strengthen the health programme are as important here as in the lower grades, for example:

The weighing and measuring of students at certain intervals during the term is an incentive for better hygienic living. In this connection students should keep their weight graphs.

Suitable group projects are considered valuable and can be suggested and developed by the pupils themselves.

Debates and discussions relating to health topics as published in the press and journals will also tend to stimulate interest and promote opinion.

Biography is full of significant health messages, especially that of Pasteur, Lister, Jenner and others.

All this is but a suggestive outline, but perhaps sufficient in content to serve as a guide along the way to a complete and satisfactory health programme for secondary education.

Health Legislation in Nova Scotia

A. C. Jost, M.D.

State Executive Officer, Deleware

THE appearance recently of a History of Medicine in Canada has incited interest in the early legislative enactments dealing with medical subjects, and has led to an examination of some of the earliest Provincial statutes. The desire to itemize these as a matter of record is the occasion of this article.

There have elsewhere appeared some notes relative to the complicated duties of the doctor who was so ill-advised as to ship for the voyage to a "sedentary" fishing establishment under the French régime. Some notes have also been made respecting the old French surgeon, Bourgeois, whose removal to Cheignecto indicated his pioneering instincts. Gaudet has referred to the difficulty of locating the old parochial records of births, marriages and deaths, scattered and lost at the time of the expulsion.

During the early English occupation (1713-1749))references to matters of medical interest are not very frequent. Annapolis and Canso were the only centres of settlement. We have much reason for believing that very inadequate provision had been made for medical or surgical care. This was probably inevitable, since the conditions were to all extent outpost, or pioneering conditions. The old French hospital at Annapolis was available, but in 1714 Caulfield reports to Nicholson, that "being intierly unprovided with any maner of medecines" the garrison will be in a miserable state if a contagious disease, (then rife among the French) attacks its members. Surgeon Skene was then the regimental surgeon and in a later letter he is commended for his faithful service, but the retention of the surgeon's chest at Placentia, Newfoundland, was not an aid to his efforts.

The letters, books and other material give gossipy details of the tribulations of some of the surgeons or physicians. Very frequent indeed are the references to a certain Dr. O'Neal, whose position as taxgatherer had attached to it sufficient to account for much unpopularity, without there having been added thereto the difficulties attendant on a pioneering practice. In troubles often, in incarceration at least once, Dr. O'Neal took up a good deal of the Council's time.

Governor Cornwallis' landing at Halifax and the new settlement opened up a new era. His Commission, granted by the "special Grace. certain knowledge, and meer motion" of His Majesty, made no reference to health matters, except as these were included in the "public peace, welfare and good government" of the Colony. But with his arrival took place the establishment of a more fixed government, and

soon commenced the drafting of legislative enactments which have come down to us. We now find ourselves entered upon the road which leads to our present day position. Chapter 12 of the acts of 1758 provides for the issue of marriage licenses. Chapter 7 of 1759 was intended to place a bar to what was called the "importing" of disabled, infirm and useless members into the province. Chapter 4 of 1761 is an act providing for the registration of births, marriages and deaths by officials called the "Proprietor's Clerks". It was to be carried out in every township where a parish had not been established. Registration was made on the payment of a fee of sixpence to the Registrar, who might then issue a certificate for which his fee was one shilling. A later act made the town clerks Registrars and empowered them to add to their records those obtained from the church books. Chapter 6 of the same year was intended to provide machinery to prevent the introduction of "any plague, smallpox, malignant fever or other contagious distemper" into the province. Outside the area of Halifax, Justices of the Peace were given powers of health supervision, in respect of disease being introduced from outside the province or into any community from a neighbouring one. Chapter 2 of the acts of 1775 amplifies the act of 1761, along the same lines, being directed against "plague, smallpox, pestilential or malignant fever or other contagious sickness". It also makes provision for those who desired to be inoculated against smallpox. These patients must remain in a house at least 150 rods distant from any other, and a warning flag must be hung out. This matter was made the subject of a separate act a few years later, but this remained in force only two years.

Chapter 3 of the acts of 1799 was a very distinct advance over former legislation dealing with the prevention of disease. It provided for health officers or persons appointed to see that quarantine was enforced, to visit ships and to investigate the health of the crews. Yellow fever was added to the list of diseases. The penalties were extreme. Giving a false certificate or landing goods without a permit was considered a felony, "without benefit of clergy". The governor could appoint as many health officers as he saw fit. They were to be paid a reasonable sum from the provincial treasury. Publication in the Royal Gazette of rules and of notifications respecting quarantined areas was provided for.

Chapter 16 of the acts of 1819 set the form of the license to be used under the marriage act and instructed the provincial secretary to keep a registry of the licenses granted. The first act respecting the practice of medicine was passed in 1828, and said to be intended to exclude ignorant and unskilled persons from the profession. Diplomas or testimonials were to be examined by competent judges, and a license could then be granted. The following year an act excluded from the provisions of the former one those who had already been in practice for seven years.

Chapters 13 and 14 of the acts of 1832 again deal with the prevention of "plague, smallpox, yellow fever, typhus fever, cholera morbus, or any other highly infectious disease or contagious distemper". The presence of these was to be at once reported to the local board of health, appointed "to see quarantine performed", or to the Governor. The acts refer to health wardens appointed by the Governor which wardens were to act gratuitously. They were given fairly ample powers. It is noted that white-washing with lime, was considered an alternative for "fumigation, washing and purification".

Chapter 40 of the acts of 1833 was an act for the mitigation of nuisances, and the disposal of refuse and offal. Chapter 71 of the same year set down the procedure to be followed in order to protect the public from rabid dogs. The act respecting nuisances was amplified in 1835, providing for the appointment of health inspectors by the justices of the session, and making provision for the payment of salaries to be agreed upon.

This is an extremely condensed résumé. The present Health Act has developed from those dealing with the prevention of infection and of nuisances. Registration of births, marriages and deaths continued in a desultory way, often probably wholly neglected for some years, but only as a local measure. The writer has in his possession one of these old registers and possibly more are in existence. As a provincial measure, registration, except of marriage bonds, was not undertaken till about 1865, and then for a period of about twelve years only. The present system dates from 1908.

Canadian Social Hygiene Council
10th Annual Meeting

THE tenth annual meeting of the Canadian Social Hygiene Council will be held in Montreal at the Hotel Windsor on Friday, June 21st, 1929. The morning session is being held with the Public Health Section of the Canadian Medical Association, and will be addressed by Dr. A. Grant Fleming of Montreal, Dr. J. H. Holbrook of Hamilton, and Dr. Gordon Bates of Toronto. The annual business meeting of the Council will be held in the afternoon when the presidential address and reports of the standing committees will be presented. This programme promises to be one of special interest to the profession.

Editorials

AN EVENT OF IMPORTANCE

THE Aldermanic Committee appointed by the City Council of Montreal last January to study the Health Survey has brought in its report and, to the satisfaction of everyone concerned, this report is a complete endorsement of the views and recommendations of the Survey Committee. The report of the City's committee has been adopted unanimously by the City Council.

Its outstanding features are as follows:

The City Executive fully supports the Survey.

Necessary money is to be speedily appropriated and prominent citizens consulted as to the source of such money.

A Bureau of Health is to be formed, consisting of five members, two appointed by McGill University, two by the University of Montreal with the Chairman of the City Executive. The Director of the Health Service is, ex-officio, a member.

Diphtheria immunization throughout the city is to be commenced.

Grants are to be made to exceptionally large families.

Efforts are to be made to increase present small salaries of fathers of large families.

Grants are planned for destitute mothers before, during and after childbirth.

Subsidies to social and health organizations are recommended.

THE CANADIAN PUBLIC HEALTH JOURNAL has already referred both to the need for action in Montreal and to the value of the Health Survey. THE JOURNAL now has the satisfaction of congratulating the Survey Committee on an event which appears to indicate the practical completion of their work and of commending the City Council of Montreal on their prompt endorsement of the obviously sound recommendations presented to them.

One hopes that this official commendation of the Survey Report marks the turning point in the history of the health administration of Montreal. Montreal was faced with a serious situation. But, in addition, cities cannot live to themselves alone any more than can individuals, and Montreal's record of the past has been a matter of

concern to more than the citizens of Montreal itself. THE JOURNAL expresses the hope that words will be rapidly followed by action, as doubtless they will, and that the Health Department of Montreal (to quote Alderman Desroches) will soon be on a level with that of any large city in the world. In spite of the fact that the same advice has been often given before in connection with health reforms planned in other places as well as in Montreal, THE JOURNAL cannot refrain from suggesting that although distinct and rapid progress has been made it is well to remember that a great deal remains to be done, and that public opinion is essential if the plans of the municipal government are to be effective. To the end that public opinion may be aroused, the need for public education should be constantly in the minds of all of those desirous of improving health conditions, and extensive plans for informing the public as to the need for all of the constructive steps to be taken should be a definite part of Montreal's present programme.

THE ANNUAL MEETING

THE 18th annual meeting, which will be held during the week of June 16th in Montreal, marks another milestone in the life of the Association and brings to mind the fact that the Association has functioned as an important national health agency in Canada for nineteen years. The first annual meeting of the Association was held in Montreal in December, 1911, under the presidency of Dr. T. A. Starkey. The formation of the Association was the direct result of a conference called in Ottawa in October, 1910, of the federal and provincial health officers, because of the definite need which was felt for mutual assistance and co-operation in advancing the interests of public health in all the provinces of Canada. This meeting was the first concrete illustration of the unity of purpose of all interested in the many phases of our national health. The nineteen years have been years of great progress in public health and the Association may well be proud of having had some share in the advancement of the health interests of Canada during this time.

Canadian Public Health Association

EIGHTEENTH ANNUAL MEETING

Montreal, June 18th, 19th, 20th, 1929

GENERAL PLAN OF THE MEETING

Monday, June 17th.

Executive Council Meeting.

Tuesday, June 18th.

Morning—General Session. Luncheon tendered by the Provincial Government of Quebec.

Afternoon—General Session.

Wednesday, June 19th.

Morning—Joint Session with Canadian Medical Association (Section of Public Health).

Afternoon—General Session of the Canadian Medical Association.

Thursday, June 20th.

Morning—Joint Session with Canadian Medical Association (Section of Public Health) and Laboratory Section.

—Annual Business Meeting.

Afternoon—Section of Public Health Nursing.

Evening—Dinner Meeting of the Section of Industrial Hygiene.

Friday, June 21st.

Morning—Meeting of the Canadian Social Hygiene Council and Canadian Medical Association.

Afternoon—Annual Meeting of the Canadian Social Hygiene Council.

The preliminary programme appeared in detail on pages 251 to 255 in the May number of this journal.

HEADQUARTERS

The Windsor Hotel will be the headquarters for the Associations. By this arrangement members of the Associations will be able to attend the various sessions without loss of time or inconvenience.

PROGRAMME

Joining with the Canadian Medical Association and the Canadian Social Hygiene Council, a programme of very special interest and importance has been arranged. Nine sessions are devoted to Public Health and Preventive Medicine in all their varied aspects providing for the presentation of more than forty papers. Special attention is drawn to the opening session on Tuesday, June 18th, the day preceding the first of the general sessions of the Canadian Medical Association. At the morning session, Dr. J. W. Fraser of Kitchener, will outline the successful efforts by which several hundred children have been medically examined prior to entering school. Dr. Hilton, Veterinary Director General, will discuss the problem of rabies and its control in Canada. Papers on Public Health Nursing, Mental Hygiene, and the Use of Diphtheria Toxoid will be presented at this session, thus providing a programme of real interest to practising physicians.

A luncheon will be tendered to the members of the Association by the Provincial Government of Quebec at noon on Tuesday, when the Hon. Mr. David and Dr. Alphonse Lessard will officially welcome the Association. The afternoon session on Tuesday will be addressed by Dr. James A. Doull, School of Hygiene and Public Health, Johns Hopkins University, who is the Director of the John J. Abel Fund for Research on the Common Cold. His subject will be "Recent Progress in the Study of Acute Respiratory Diseases". Dr. Doull is a Canadian, a Nova Scotian, who has made already important contributions to our knowledge of epidemiology. His contribution to our knowledge in respiratory diseases wll be welcomed not only by those engaged in official public health work, but also by all members of the profession. At this session in addition to the presidential address by Dr. Norman MacL. Harris, Chief of the Laboratory of Hygiene, Ottawa, Dr. Emile Nadeau, Assistant Director, Provincial Bureau of Health, Quebec, and Professor Charles H. Best with Dr. E. W. McHenry will present papers. It is hoped that many members of the Canadian Medical Association will plan to come to Montreal for the opening sessions of the Association's meetings.

On Wednesday and Thursday mornings the Canadian Public Health Association will meet with the Public Health Section of the Canadian Medical Association. On Thursday morning a meeting of the Laboratory Section will be held and in the afternoon the Section of Public Health Nursing. The annual business meeting has been arranged for Thursday at noon. On Friday morning a joint meeting of the Canadian Medical Association and the Canadian Social Hygiene Council has been arranged with a programme of special interest. In the afternoon the annual meeting of the Council will be held.

HOTEL ACCOMMODATION

The following is a partial list of hotels and rates:

Name of Hotel	*Double Room*		*Single Room*	
	With Bath	*Without Bath*	*With Bath*	*Without Bath*
Windsor	$8.00 up	$6.00	$5.00 up	$3.00 up
Mount Royal	$7.00 up	—	$4.00 up	—
Queen's	$7.00 up	$5.00 up	$4.00-$5.00	$2.50 up
Place Viger	$8.00	$6.00	—	—

PUBLIC HEALTH EDUCATION

MARY A. POWER, B.A.

THE HEALTH TEACHING EXHIBIT

AT THE

ONTARIO EDUCATIONAL ASSOCIATION MEETING

The Ontario Educational Association added to their annual meeting held at the University of Toronto during Easter week a unique feature this year in the form of an exhibit of health teaching material. This was assembled by the Division of Public Health Education, Ontario Department of Health, and arranged in sections.

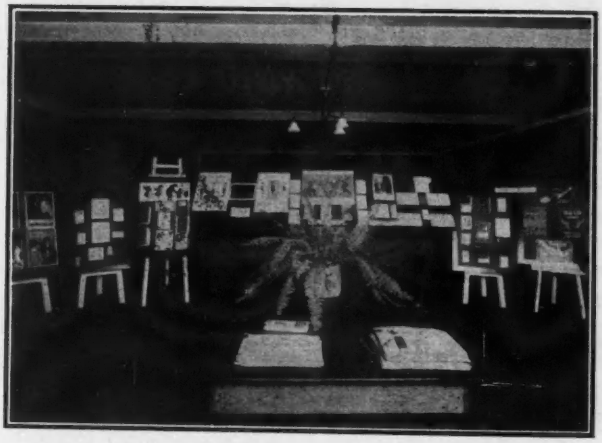
The Canadian Section included albums of projects, lesson outlines and literature from various sources used by the teachers and nurses of the respective provinces. There were posters from the Canadian National Council on Child Welfare, Canadian Tuberculosis Association, Ontario Safety League, National Dairy Council of Canada and Metropolitan Life Insurance Company.

In the General Section the most popular feature was "The House That Health Built", part of the interesting exhibit sent by the Dairy Branch, Dominion Department of Agriculture, while the Canadian Junior Red Cross showed the wide range of their activities in an attractive display. Literature for free distribution was supplied, while the "Train for No Diphtheria Town" (Metropolitan Life Insurance Company) and the 3-unit model illustrative of school health service by doctor, nurse and teacher (Ontario Department of Health) completed the lay-out.

VIEW OF GENERAL SECTION

The United States Section was very extensive, including voluntary agencies and commercial firms, while the U.S. Bureau of Education and the Federal Children's Bureau were the only governmental departments in the list. Posters, plays and literature were sorted for the children of lower, middle and senior grades in the various displays; this enabled the teachers and nurses to locate items of particular interest in the short time at their disposal. The names of the agencies co-operating are too numerous to list, but the collection was wide in scope and quite representative of the range of available material in the United States.

ANOTHER VIEW OF GENERAL SECTION



UNITED STATES SECTION

PUBLIC HEALTH NURSING

RUBY M. SIMPSON, REG.N., AND FLORENCE H. M. EMORY, REG.N.

OBJECTIVES AND ACCOMPLISHMENTS OF THE SENIOR AUXILIARY SCHOOLS

JOSEPHINE F. KILBURN, Reg.N.

In the last ten years the public at large have awakened to the fact that the mentally abnormal adolescent requires different treatment and care from that of his normal brothers and sisters. The auxiliary classes of the public schools care for this type of child until, according to size and age, the pupil should be ready for technical school or high school. Because of limited intellectual endowments, these pupils are not able to make progress with their more talented school companions. Fortunately for Toronto the technical educational programme provides two excellent schools for them, namely, the Junior Vocational School for boys and the Edith L. Groves School for girls.

It is in these two schools that the total personality of each pupil is studied and requirements to fit him for future life considered. Although it is not feasible for these individuals to be segregated, their training should be practical enough to serve industrial needs when they go out into the wage-earning world. Some, however, are not able to benefit to any great extent and will need a certain amount of supervision and assistance throughout life. It is our duty to overcome the obstinate fatalism into which it is so easy to drift. We should remember that nearly every child can be trained to show, or at least to feel, superiority in something and it is in these two schools that the teachers seem adepts at discovering this spark and in fostering it until the individual is capable of distinct social success.

The Auxiliary School for Girls was first opened in a house on Huron Street in 1923. It was moved in 1924 to Jarvis Street School and later, in 1926, to the former Joseph Workman home on Dovercourt Road. The pupils themselves felt a certain stigma attached to the word "Auxiliary" and asked that the name of the school should be changed. Mrs. Edith L. Groves, a member of the School Board, always a close friend of this school, and known by all the girls, filled the breach by allowing her name to be used and the Vocational Training School for Retarded Girls became known as the Edith L. Groves School. Equipment being most inexpensive, the atmosphere of a normal home prevails throughout this school. There is accommodation for 250 girls.

The staff are qualified academic teachers who have special training which enables them to correlate the academic with the practical. The psychiatric supervision is conducted by Doctor E. P. Lewis, Director of the Division of Mental Hygiene of the Department of Public Health, and physical health is looked after by a physician and a public health nurse of the same department. A social worker is also provided whose duty it

is to assist with vocational placement and to do follow-up social work upon the departure of pupils from the school. The Big Sister Association supplies a full time "big sister" to assist in the many capacities of a social worker in an institution of this kind.

The same staff regulations prevail in the Boys' Vocational School on Jarvis Street. This school is at present being rebuilt and will be a credit to the Advisory Industrial Committee which has done so much for the development of this branch of their work. A course of study is planned on the three year basis in both the schools; the pupils are eligible between ages of 13 and 16 years, and are all recommended by the psychiatrist of the Department of Public Health. It is unfortunate that in this brief article one cannot cover the most excellent work done in the Junior Vocational School for Boys, and that of necessity remarks must be confined to the Edith L. Groves School.

The pupils receive training in:—

1. Typing and business letters, (most useful in applying for positions), in filing and in application forms.
2. Civics, which helps the girl to respect the rights of others and to understand the government and public buildings of her own city.
3. Power machine work is as yet limited, but great expectations are held out for the near future.
4. Domestic arts, consisting of laundry, table service, cooking, buying, sewing and millinery.
5. Personal hygiene is also stressed and hair-cutting, shampooing and manicuring are taught.
6. Since the girls of this type know very little of real organized group play, club meetings, gymnasium and sports are featured, and since dancing is very often their only means of recreation in later years, it is taught in a wholesome way.

Special emphasis is placed upon the care and beautifying of the home, also on agriculture and horticulture.

This school has been criticized as training retarded girls for motherhood. While this is not an objective, yet it is inevitable that most of these girls will be future mothers, and what could be more worth while than to help them to make an improvement on their own, very often shiftless, upbringing.

Data obtained from statistics of the vocational social worker in relation to the various employments follow:

Domestic work	31
Factory work (various)	42
Power operating	28
Candy factories	21
Knitting mills	9
Sheet metal	2
Laundry	5
Cleaning and dyeing	5
Manufacturing leather goods	7
Book-binding, cataloguing, stationery	11
Radio, prestolite, electric	9
Biscuit factory	6
Shoe factory	5
Perfumes and drugs	5
Making flowers and lampshades	3
Millinery	4
Hairdressing	3
Paper box	3
Waitress in tea room	3
Telephone	3

Miscellaneous factory jobs such as:—Tinsel, button, gum, paper patterns, corsets, stuffing dates, French ivory, wallpaper, filling tea-bags, auto accessories, stitching sacks, working in stores, parcelling, etc.

The accomplishments of the school are hard to estimate and are not wholly reflected in cold figures which show the type of work engaged in at present by the 450 graduates. But if we have been able in most instances to tide over the temperamental inclination of the individual to drift from job to job until she becomes of the

drifting labour class, or worse still, the public charge, morally, economically and physically, and if a feeling of inadequacy and inferiority has been replaced with compensatory interests and ambitions, then these schools have been successful, and have more than justified their existence.

CHILD HYGIENE

J. T. PHAIR, M.B., D.P.H. AND H. E. YOUNG, M.D., LL.D.

THE EATING OF CANDY

There is a concerted movement on the part of the manufacturers of sweets, to further encourage the consumption of sugar and its end products, by people of all ages. One is interested in the effect that the acceptance of such propaganda will have on the nutritional problems of the child health worker. I have no intention of sitting in judgment as to the merits or demerits of the case presented by the proponents of increased consumption of sugar. One is further not concerned with any consideration as to whether or not the promoters of this propaganda are solely interested in the public good; big business is not primarily altruistic. The questions before us are as to whether the claims advanced for the increased consumption of sugar are warranted, or whether the arguments presented by those who view this propaganda with alarm are justified in the light of our knowledge of child hygiene. One rules out of such discussion any consideration of the use of sugar in infant feeding, where its place has been established, and we have no major interest in its consumption by marathon runners, lumber jacks, stevedores, or arctic explorers, although I note that many of the advocates of its more generous consumption cite the advantages which accrue to these individuals from its free use.

Assimilable carbohydrates are essential to a satisfactory diet, and sugar is one of the most useful of these. It appears in a variety of forms in nature although its general consumption is in the form of commercial sucrose. It is palatable, rapidly absorbed from an otherwise empty stomach, cheap, easily obtained in a commercially pure form and not subject to ready deterioration. It, however, is, of all freely consumed foods, the most completely devoid of proteins, vitamins and mineral elements; is very prone to be habit forming, and, on the score of its palatability, likely of abuse.

That its free consumption is harmful, is denied, except in cases of individuals with a low sugar tolerance. The argument that it is detrimental to the teeth is questioned, when a well-balanced diet is maintained. This statement would lead one to a summation of the present generally known facts regarding sweets and their place in the diet of younger children. Does the generous use of sugar make more difficult the essential aim of the individual interested in the diet of the presumably normal child, which is the

maintenance of the well-balanced diet referred to? The evidence of paediatricians would tend to support the claims of those who say that it does. Its palatability condemns it. Eaten at the end of a well-balanced meal, sweets are desirable; between meals, to be condemned. That it is possible to encourage the wider use of sugar in any manufactured form, and have such eaten only at the time when it will contribute to the physical well-being of the child, would seem to be frankly, at least, difficult. One is, therefore, inclined to feel justified in erring on the side of the restricted use of sweets for children, despite the claims of the propagandists.

J. T. Phair.

EPIDEMIOLOGY AND VITAL STATISTICS

A. C. JOST, M.D., AND NEIL E. MCKINNON, M.B.

SMALLPOX AND VACCINATION

The recent occurrence in England of forty-five cases of virulent smallpox with six deaths, all arising from one case which developed on board the steamer Tuscania at sea, is evidence of what happens when unprotected people are exposed to the disease. The cost of the subsequent investigation, supervision and control of contacts, the dislocation of the routine of business, the interference with international trade and travel,—all emphasize the great necessity for vaccination. Epidemics of mild smallpox, such as we have experienced in Ontario in the past three years, tend to make us forget that the virulent form may show itself at any time. This recent English experience, the record, too, of 130 deaths among 233 cases from January 1st to February 16th in Bombay, and the Windsor experience in 1924 when 32 deaths occurred among 67 cases, leave no question as to the necessity for vaccination.

The occurrence of cases of encephalitis in persons recently vaccinated in certain European countries has been carefully investigated by two committees in England and a committee of the Health Section of the League of Nations. The first English Committee, under the chairmanship of Sir Frederick Andrewes, investigated the earlier cases which were reported in England prior to May 1925. It was shown that in England about fifty cases had occurred and since that date to the present approximately one hundred cases have been reported in England and Wales. A series of cases was reported in Holland with a few cases from Germany, Switzerland, France and Poland. The Committee of the Health Section of the League of Nations under the chairmanship of Professor Jorge investigated cases in Holland, England, and other countries and the second English

Committee under the chairmanship of Sir Humphry Rolleston, considered the whole subject of vaccination, reviewed and analysed the reports of the two previous committees and investigated cases which had occurred after the publication of these reports. The reports of the Committees draw attention to the observation in the last few years of the increased number of cases of encephalitis following the exanthemata or other acute infections. Neal and Applebaum have reported eight cases of encephalitis following measles in 1926 and 1927, whereas they saw only four in the previous eight years. Lust, in 1926, reported three similar cases seen in the period of three months. Brain and Hunter, in February, 1929, reported six cases of encephalitis in children which differed from encephalitis lethargica and were not connected in any way with vaccination of other acute infection. The Rolleston Committee draws attention to the fact that two cases which simulated in many ways post-vaccinal cases occurred in two young women, neither of whom had been vaccinated at any time; the one apparently contracted the disease while nursing the first case. The cases of post-vaccinal encephalitis had an onset of from two to thirty-two days following vaccination, but the majority were first noticed from ten to twelve days after vaccination. In some instances cases of encephalitis lethargica or poliomyelitis were occurring at the same time and in the neighbourhood of the post-vaccinal encephalitis, but in many instances there was no evidence of encephalitis lethargica or poliomyelitis in the district.

Is vaccination, then, related to this encephalitic condition or is it mere chance overlapping with cases of poliomyelitis or encephalitis or some as yet unrecognized cerebral infection? Statistically, it appears to be definitely more common among vaccinated individuals than would be expected if chance alone determined the selection. The age of the persons affected has varied from infants to adult life. One striking fact, however, is brought out by an analysis of the cases occurring in Holland, namely, that only a very few of the ninety-three cases which were reported occurred in children under two years of age. The Report of the Committee of the Health Section of the League of Nations concludes that there is no evidence to indicate that the vaccine virus itself is responsible for the encephalitis. The Rolleston Committee agree in this and conclude that:—

(1) In place of the officially advocated four insertions, trial be made of vaccination and re-vaccination in one insertion, with a minimum of trauma, and that multiple scarification and (or) cross-hatching be *deprecated.*

(2) Primary vaccination be performed in infancy, between the ages of two and six months as at present, and that re-vaccination be offered at the time when a child enters school (5 to 7 years) and again on leaving (14 to 16 years).

REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA* BY PROVINCES—APRIL 1929

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Diphtheria	14	10	236	212	62	38	46	56
Scarlet Fever	98	56	584	455	93	122	163	30
Measles	129	42	613	2387	1312	445	353	756
Whooping Cough	13	3	114	621	128	48	16	13
German Measles	5	—	41	18	†	15	6	4
Mumps	—	—	183	758	215	129	131	449
Smallpox	1	—	46	83	3	23	15	46
Cerebrospinal Meningitis	—	1	9	13	4	3	14	2
Anterior Poliomyelitis	—	—	—	—	1	—	1	—
Typhoid Fever	1	4	68	85	29	3	9	5

*Data furnished by the Dominion Bureau of Statistics, Ottawa.
†Not reportable.

NATIONAL VOLUNTARY HEALTH AGENCIES

RUBY E. HAMILTON, Reg.N.

CLASSES CONDUCTED BY THE VICTORIAN ORDER

While realizing to the full that the teaching likely to be most effective is that given simultaneously with bedside nursing care, nevertheless Victorian Order policy allows for "straight" educational work in the conducting by its nurses of Little Mothers' League classes, and classes in home nursing, first aid and mothercraft.

In 1928, Victorian Order nurses throughout Canada, in addition to their heavy programme of bedside nursing and clinic work, taught in the neighbourhood of four hundred classes. Organizations and groups at whose request the Victorian Order co-operated in the giving of these classes included the Red Cross, the St. John Ambulance Association, the Girls' Friendly Society, technical schools, C.G.I.T., C.S.E.T., and other church groups, Girl Guides and Boy Scouts.

Under the joint auspices of the Diet Dispensary of Montreal, and the Victorian Order, an interesting experiment was carried out in that city last summer. Twelve cooking classes were given by the Dispensary dietitian to a group of little girls whose interest in the project had been secured by the Victorian Order nurses. The nurses co-operated in the actual class work by linking up the food, featuring in each day's lesson with a health talk. The total attendance at these classes was 240. The girls were quite enthusiastic, several asking if they might not "take the classes over" the next summer.

In one of the western centres of the Order several girls who have taken the class in home nursing conducted by the Victorian Order nurse, have professed their interest in nursing as a career, and have entered hospital to commence training. From several

other centres has come word that during the influenza epidemic of the past winter, a number of women who have taken the classes in home nursing were capable of sterling service in the community emergency.

Tangible results in educational work are rare, and at all times, difficult of measurement. The above statements are, however, encouraging, and might well serve as an index of the worth and success of this phase of Victorian Order work.

CHILD WELFARE COUNCIL ANNOUNCES GENEROUS DONATION

The Canadian Council on Child Welfare recently announced that through the generous interest of Canadian life insurance companies, they will be enabled to undertake a three-year intensive educational campaign in the field of maternal and infant welfare. Health authorities throughout Canada have been urging educational and administrative efforts to reduce the heavy annual maternal death rate and the needless loss of so many thousand infants in the first month of life.

The Council has been carrying on considerable educational work in co-operation with the public health departments of the provinces in the distribution of simple prenatal letters, diet folders and other nutritional material. The organization will now concentrate, however, on prenatal and postnatal literature, malnutrition and diet folders, published in both English and French, and which will be prepared and reviewed by competent authorities before release. A special feature of the work will be the preparation of health exhibit material, which will be available to other organizations, conferences, etc., but especially for women's conventions, for fall fairs, and summer picnics, in the smaller towns and cities and in the rural areas.

The development of this branch of the Council's work will be placed in charge of a new assistant secretary, Miss Dorothy Jones, R.N., of Saint John, N.B., but at present on the staff of the Child Welfare Association of Montreal. Miss Jones is a brilliant graduate of the Montreal General Hospital, with a fine record as district worker with the Montreal association.

The direction of the work will be handled by a Committee of the Child Hygiene Section of the Council, including representative public health workers across the Dominion.

COMING MEETINGS

JUNE 18, 19, 20—CANADIAN PUBLIC HEALTH ASSOCIATION, Hotel Windsor, Montreal, Que.
JUNE 18-21—CANADIAN MEDICAL ASSOCIATION, Montreal, Que.
JUNE 21—CANADIAN SOCIAL HYGIENE COUNCIL, Montreal, Que.
JUNE 24-28—AMERICAN WATER WORKS ASSOCIATION CONVENTION, Toronto, Ont.
JULY 8-13—INTERNATIONAL COUNCIL OF NURSES, Montreal, Que.

NEWS AND COMMENTS

P. A. T. Sneath, M.D., D.P.H.

Meeting Postponed

THE meeting of voluntary organizations proposed for May 1st and 2nd at Ottawa has been postponed owing to the fact that Dr. John Amyot, the Deputy Minister of Pensions and National Health, was obliged to leave for Europe. It is probable that Dr. Amyot will call the meeting in September. Due notice, however, will be given later.

Awards for Mental Hygiene

IT is announced by the Hon. George W. Wickersham of New York, that The Thomas William Salmon Memorial has been established to provide recognition to the scientist who makes the greatest contribution to the study of mental disease during each year. Awards are to be national and international, and will provide for the wider dissemination of the knowledge of mental hygiene and insanity through co-operation with the New York Academy of Medicine, in whose hands the administration of the $100,000 fund is to be placed.

The late Dr. T. W. Salmon in whose memory this fund is established, was the Professor of Psychiatry at Columbia University and Medical Director of the National Committee for Mental Hygiene in the United States.

College of Obstetricians and Gynaecologists

GREAT Britain, in common with other countries, is most concerned with the rising maternal mortality rates. Investigation has shown that along with other factors may be included some lack in facilities for the instruction of students in the very important subjects of obstetrics and gynaecology. It becomes necessary, therefore, that such loopholes in the defences that may exist be promptly corrected. As a result, provisional articles have been drawn up by the leaders in this branch to found a British College of Obstetricians and Gynaecologists with an establishment of Fellows and members. The purposes are largely those of ensuring the complete qualifications of practitioners of these specialties and of making certain that all students who graduate in medicine have had complete instruction in these subjects.

Garton Prizes

THE Grand Council of the British Empire Cancer Campaign have confirmed a recommendation that two prizes of £500 each with an appropriate medal should be offered in the years 1931 and 1933 for the best original piece of work carried out in the British Empire on the investigation of cancer. These prizes are to be known as the Garton prizes and medals, the subjects for investigation being chosen by the Investigation Committee. Competitors may be single research workers or a team of such working together.

Prince Edward Island

THE Provincial Government has recently made a grant of $30,000 towards the building of a new thirty-bed tuberculosis sanatorium to be erected on the outskirts of Charlottetown. The Government has further undertaken to contribute $12,000 annually towards the maintenance of the institution, the remainder for capital expenditure to be raised by public subscription.

Nova Scotia

AN hospital association for the Province was organized recently at a meeting attended by over fifty representatives of the twenty-four hospitals in Nova Scotia. It is hoped that this association will amalgamate with similar associations in New Brunswick and Prince Edward Island to form one strong Maritime body. The idea of the development of hospitals as community health centres, rendering service in prevention of disease as well as in the care of the sick, was emphasized at the organization meeting.

Quebec

A CAMPAIGN in aid of the Laurentian Sanatorium at St. Agathe is under way to raise sufficient funds to wipe out an operating deficit of the past few years and to provide new equipment. It has already met with encouraging response.

The Montreal General Hospital announces a gift of $50,000 from J. C. Newman, Esq., to purchase radium for use in the treatment of cancer. The only stipulation connected with the gift is that free treatment be given to those unable to pay.

Dr. Paul Parrot, Director of the Division of Vital Statistics in the Provincial Bureau of Health, spent a few days recently in Toronto visiting the Ontario Department of Health.

Ontario

THE Donald C. Balfour Lecture was delivered on Lister Day, April 5th, in Convocation Hall, University of Toronto, to the undergraduates and staff in the Faculty of Medicine, and to the profession in Toronto. The founder of the Lectureship, Dr. Donald C. Balfour, delivered the Lecture, which was "Surgical Diseases of the Stomach". Dr. Balfour is a graduate in medicine of the University of Toronto of 1906. He is Professor of Surgery, University of Minnesota, and a member of the staff of the Mayo Clinic, Rochester, Minn.

Dr. F. S. Burke has resigned as Director of Medical Services, Department of Public Health, Toronto, and is now attached to the headquarters staff of the Department of Pensions and National Health at Ottawa.

Professor Andrew Hunter was recently the guest of honour at a dinner at the York Club given by his colleagues in the Faculty of Medicine, University of Toronto. Prof. Hunter is leaving Toronto to assume the Gardner Chair of Physiological Chemistry in the University of Glasgow.

The Toronto Home and School Council in co-operation with the De-

partment of Public Health, has opened three health centres designed for the examination of pre-school children. The Department of Public Health is providing a physician and nurse for the morning clinic at each centre. The clinics are to be held in three churches so located that they serve the east, north and west sections of the city. No attempt is being made to afford treatment; children showing defects that require treatment are to be referred to their family physician.

Dr. H. C. Cruikshank, it is a pleasure to report, has made splendid recovery from his recent illness and is at present on an extended holiday in British Columbia before resuming his work.

Miss Mary Millman, District Superintendent of Nurses in Toronto is chairman of a "hospitality committee" whose members will look after nurses visiting Toronto previous to and following the international meeting in Montreal, July 8th to 13th. The committee is composed of about eighteen members with representatives from the larger hospitals, public health agencies and the central registry. The headquarters for the week previous to the meeting will be at the General Hospital and, for the week following, at the new Royal York Hotel. It is hoped that many visitors will avail themselves of the services of the committee, who will arrange for visits to various places of note from a public health, hospital, social or educational standpoint.

The Public Health Section of the Canadian Nurses' Association have asked the Toronto branch to prepare an exhibit for the Montreal meeting showing the team play in community work among the various health, social and educational agencies.

The following papers of the public health interest were presented at the meeting of the Ontario Medical Association in Hamilton, May 28th-31st: "The General Practitioner and the Practice of Preventive Medicine", Professor J. G. FitzGerald, Toronto; "The Growing Importance of the Diseases of Middle Life", Professor Oskar Klotz, Toronto; "The General Practitioner in Public Health", Dr. A. Grant Fleming, Montreal; "The Effect of Fascism on Private Practice and State Medicine", Professor Roatta, Florence, Italy; "The Physician's Opportunity in Industry", Dr. J. G. Cunningham, Toronto; "Ante-natal Care", Dr. A. G. Howson, Peterborough; "The Elimination of Deficiency Diseases in Ontario", Dr. F. F. Tisdall, Toronto.

Manitoba

THE Manitoba Dental Association at Winnipeg tendered a banquet on April 2nd to Dr. H. Thompson, Field Secretary of the Canadian Dental Hygiene Council, at which he reviewed the progress of the Mouth Health Campaign in the Province. Up to that time some 25,000 school children had been examined. Two travelling dentists, who confine their efforts entirely to indigent persons in outlying districts, in about six weeks visited eleven places, examined 1,100 patients of whom 949 required dental treatment. It is considered that this campaign has been a distinct success.

Saskatchewan

THIS province administers the only maternity grant in Canada. The full amount of the grant is $25, and is designed to assist expectant mothers in the outlying, unorganized districts, to obtain competent medical attention during the puerperium. The grant is payable to the hospital where treatment is afforded or to the physician attending; where there is no physician within twenty-five miles of the place where the patient is confined or when the physician is not available, payment is made to the nurse in attendance; or, lacking any of these, payment may be made to the patient herself.

In order to obtain the benefit, written application is made by the expectant mother to the Deputy Minister of Public Health, stating the period of residence in the Province, present residence, and distance from the nearest physician. Further information relative to the financial status of the husband and his occupation must be given accompanied by a recommendation for the benefit by a responsible district or municipal officer such as the Reeve, or Secretary-Treasurer, the local Registrar of Vital Statistics, or a member of the Legislative Assembly.

The grant is payable either fully or in part at the discretion of the Deputy Minister. In 1928, 521 mothers benefitted by this grant under which $12,137 was expended.

The Regina Medical Society has been notified by the Embury Chapter of the I.O.D.E. in Regina, of their intention to supply drugs to such patients as are stated by the attending physician as unable to meet the costs themselves.

Alberta

AT the last session of the Provincial Legislature, which was closed March 20, an amendment to the Public Health Act was passed that gives the Minister of Health authority to organize district health units when the scheme providing for the establishment of such district health units has been approved by such number of municipalities as in the opinion of the Minister may be sufficient for the formation of districts. The Province is, therefore, now in a position to put the health unit principle into practice. The working out of these units will be watched with interest.

Dr. A. F. Anderson of Edmonton, was appointed Medical Superintendent of the Royal Alexandra Hospital, Edmonton, to fill the vacancy occasioned by the death of the late Dr. Harry Smith.

Four women physicians are to be appointed by the Provincial Department of Health to serve in those outlying districts of the Province that are remote from medical and hospital service. Dr. Margaret Owens of Grenville, Quebec, received the first appointment, and reported for duty March 15th, 1929.

The Report on State Medicine has been presented to the Provincial Legislature as a result of an investigation initiated by that body. While full details are not available, the press reports infer that the costs of such are too great to warrant any action at present.

The members of the College of Physicians and Surgeons of Alberta are being canvassed through the College for the purpose of determining whether or not the profession in the Province is prepared to assume the work heretofore carried out by the travelling tonsil clinics operated by the Department of Health. If this plebiscite is favourable, it will provide at least two improvements on the service now afforded, in that operative work will be carried out in hospitals, not in improvised centres such as school houses, churches and municipal buildings, and that proper post-operative care will be locally available.

British Columbia

DR. E. R. Hicks of Cumberland, has been appointed Medical Health Officer for the surrounding district and Medical Inspector of Schools for Minto, Royston, and Union Bay on Vancouver Island.

The following are members of the Commission appointed by the Provincial Legislature to enquire into the desirability of health insurance in British Columbia: Dr. L. E. Borden of Nelson; W. F. Kennedy of North Okonagon and C. F. Davis of Cowichican-Newcastle, representing the Conservatives; Dr. J. J. Gillis of Merit and G. S. Pearson of Nanaimo, representing the Liberal party.

The annual "Institute for Public Health Nurses" conducted by the Provincial Board of Health and the Department of Nursing and Health of the University of British Columbia was held April 3rd to 5th, 1929, in the nurses' lecture room of the Vancouver General Hospital. Amongst the speakers were Dr. H. E. Young, Provincial Health Officer, Victoria; Prof. H. T. J. Coleman, who spoke on philosophy; Judge Laura E. Jamieson, who spoke on delinquency, and Dr. Edith S. Bryan of the University of California, who spoke on mental hygiene. The social features were a tea given by Miss K. W. Ellis, Superintendent of Nurses in the training school of the Vancouver General Hospital, and an excursion on the Inspection Boat, "Sanita" as guests of the Provincial Board of Health.

At Convocation Exercises of the University of British Columbia, May 9th, 1929, the following degrees and certificates were conferred: Bachelor of Applied Science (Nursing)—Evelyn Anderson, Jessie Aske, Margaret Dorsett, Mary Henderson, Edith Tisdall, and Muriel Upshall. Certificate in Public Health Nursing—Hettie E. Fawcett, Olive Ings, Marion S. Wismer, Lillian A. Wooding, and Eileen Wright.

All six of those candidates who received the degree selected the course in public health nursing in the final (fifth) year of their university course. These, therefore, will enter the ranks of public health nurses. Certificates in public health nursing have been awarded to eighty graduate nurses; twenty-seven of those graduating with the degree of B.A.Sc. (Nursing) have selected public health nursing for the work of the final year, making a total of one hundred and seven who have graduated in this course since its inception in 1920.

BOOK REVIEWS

D. T. FRASER, B.A., M.B., D.P.H. and R. R. MCCLENAHAN, B.A., M.B., D.P.H.

Changing Concepts in Bacteriology

—Monographs on General Agricultural and Industrial Microbiology. Vol. 1. Morphologic Variation and the Rate of Growth of Bacteria. By Arthur T. Henrici, M.D., Professor of Bacteriology, University of Minnesota. C. C. Thomas, Publisher, Baltimore, Md. Price $3.00.

In this first number of a new series of monographs the researches and problems dealth with are, perhaps, of no immediate application in the practical work of a public health laboratory. They are none the less fundamental to bacteriology as a science, as they are carried out under the stimulus of a desire for information on the basic interrelation between the physiological and morphological characteristics of micro-organisms.

The author considers the claims of the two more or less ill-defined schools of thought on the subject of bacterial form—the monomorphists and the pleomorphists. The current theory of monomorhpism has of course always recognized the existence both of so-called normal forms and of involution forms of bacterial species; it does not, however, include involution forms in the normal life cycle of the organism, but attributes their appearance to more or less abnormal occurrences, such as sudden or marked changes in physical or chemical environment, or to the production of autotoxic substances in the medium. The more extreme pleomorphists, on the other hand, claim the normal existence in many bacterial species of a complex life cycle, such as is known to exist in fungi, of which the commonly found rod or sphere forms but a single phase.

The author's attitude toward the latter school may be summed up in his own words: ". . . . while these papers have probably not convinced more than a very few that bacteria exhibit complex-fungoid life cycles, they have demonstrated beyond question of a doubt that bacteria do regularly show pronounced morphologic variations, the nature and significance of which must be determined before we can make any real progress towards understanding the fundamental biological problems of the group . . . . one is impressed with the meagreness and haphazard character of the observations as compared with the widespread importance of the conclusions."

The original contribution of Dr. Henrici's work is a newer theory derived from careful observations which include actual measurement, by one method or another, of nearly 100,000 bacterial cells. The species dealt with at first hand include E. coli, B. megatherium, a representative of the diphtheroid group, and the cholera vibrio. The chapters dealing with technical methods and with the various known methods of measuring

the rate of growth of cultures and of cells are a striking demonstration of the applicability of comparatively simple statistical methods to the study of bacterial life. The system of making measurements of individual cells from projections of micro-photographs of known magnification is not, of course, new, but has been developed by the author to a high degree of usefulness.

The new theory of cytomorphosis is claimed to be not incompatible with the experimental findings of either monomorphist or pleomorphist workers. The author designates so-called normal bacterial forms as mature or differentiated, the involution forms as senescent, and further recognizes a third or embryonic type of cell characteristic of the stage of accelerating growth of a culture. The acceptance of such a new type of cell necessarily implies that morphologic variations are occurring continuously at all stages during the life and death phases of the micro-organism, a process already known to occur in the vegetative cells of multi-cellular organisms. This seems, indeed, a simpler and more logical way of explaining changes in bacterial form, than the postulation of a complex life cycle of fungoid, or protozoan type, in which each change of form has to be explained as a new phase in the cycle.

D. C. B. Duff.

The Human Machine: How Your Body Functions. — *William H. Howell, The National Health Series. Funk and Wagnalls Company, New York and London,* 1924. Price 30 cents.

As a member of a series of little volumes published under the auspices of the National Health Council, this book is intended to give a brief presentation of human physiology. It is written by a well known American physiologist and is not only accurate and informative, but fairly readable. In discussing scientific subjects for the laity, writers frequently resort to "journalese". Surely it is possible to present new ideas in clear and simple English without unduly tiring the reader. Chapter VI, entitled The Sense-Organs, deals only with the eye. Other minor criticisms might be made, but, notwithstanding, the book may be recommended as one that can accomplish much good.

E. W. McHenry

BOOKS RECEIVED

Laboratory Diagnosis and Experimental Methods in Tuberculosis. By Henry Stuart Willis. Charles C. Thomas, Publisher, Springfield, Ill., 1928. P. 318, price, cloth $3.50, keratol $4.25.

An Outline of Endocrinology. By W. M. Crofton. The Macmillan Company of Canada, St. Martin's House, Toronto. Second edition, 1929. P. 157, price $2.50.

Youthful Old Age. By Walter M. Gallichan. The Macmillan Company of Canada, St. Martin's House, Toronto, 1929. P. 236, price $2.75.

CURRENT HEALTH LITERATURE

D. T. FRASER, B.A., M.B., D.P.H.

Septic Sore Throat Epidemic in 1928 in Massachusetts — *Epidemiology. Lombard, J. of Prev. Med., Vol. 3, March* 1929.

This is the first detailed report of the epidemic; laboratory and clinical studies are in preparation. The careful record of any epidemic is always instructive and in this case is of fascinating interest as well. In a town of 4,000 population, 880 cases of septic sore throat were reported, with 48 deaths. These are the collected data. On evaluating a sample of the population, it was established that between 925 and 975 individuals actually had the disease, which is an attack rate of 221 per 1,000. The symptoms were in the main classical, that is; sore throat, fever, headache, adenitis, and prostration. Rashes of a scarlatina form or erysipeloid character were occasionally encountered. Unlike two other epidemics of septic sore throat, peritonitis as a cause of death was uncommon. The epidemic was at first thought to be influenza. When the exact nature of the disease was recognized, emergency regulations were enforced. These comprised the boiling or pasteurization of all milk, the closing of theatres and so on. A hospital of 71 beds was established and the services of 185 nurses were acquired. The cost of the epidemic cannot be satisfactorily estimated as no account was taken of the loss of time, the cost of medical attendance and of funeral expenses. However, the tax rate was increased 30 per cent which meant the raising of $33,000.

Only raw milk was supplied. Ninety-five per cent was furnished by four distributors. On investigation it was found that one cow had acute mastitis and the presence of haemolytic streptococcus of the epidemic type was demonstrated. There is not conclusive evidence that the cow was infected by a sick milker, though the probability is great. However, it was definitely established that the infected cow was responsible for the epidemic and that nearly all the sick persons used milk or cream from distributor A in whose herd was the infected cow, and who supplied 35 per cent. of the total milk consumed. Thus the attack rate in customers of A was 453 per 1,000; other distributors, 23 per 1,000. The mean duration of the disease was 18 days. There is ample evidence that contact infection did not play a predominating role. One striking example of this fact was found among the 36 individuals living in two houses under very crowded conditions and in close association. One family of nine used canned milk; the other three families used milk supplied by A. In the former group no cases appeared; in the latter, eighteen. The average incubation period of the disease was two days. One immediate result of this disastrous epidemic is that a milk inspection demonstration has been established for the County by the State Department of Public Health. Two pasteurization plants are now operating in the town. The writer states, "The epidemic is one more argument that raw milk is potentially dangerous and that pasteurization should be universal."